American Journal of Public Health
and THE NATION'S HEALTH

Volume 27 October, 1937 Number 10

The Early American Public Health Movement*

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THERE has been some tendency, in recent years, to refer to the early public health movement as having been largely "a matter of pipes" or a campaign against smells. The subject seems literally as well as figuratively a trifle malodorous; and there is an inclination to pass over it hurriedly in order to consider the superiority of the public hygiene of our own day. All this would have seemed startling to those early public health leaders who, nearly a century ago, felt that they had already undertaken the great health reform of modern times. There was, for example, Wilson Jewell of the Philadelphia Board of Health who, before anyone had heard of Pasteur and Koch, believed that the new health epoch had arrived. As early as 1851, he planned a national public health association, and in 1857 he led in the actual establishment of such an organization. "Happily for the cause of humanity and the science of public health," he then declared, this body "has inaugurated a new era in the domain of science."[1]

Now one may well raise the question: By what process does a program once viewed as "a new era in the domain of science" descend in our memories to a mere "matter of pipes" or a campaign against smells? By a simple process of forgetting, perhaps—a natural result of the continuous pressure of present interests and present obligations. Yet this is neither good history nor, presumably, is it good for our souls. It is neither fair to the pioneer sanitarians nor to ourselves; for there is always the danger that indifference to the past will promote complacency in the present. It is therefore the purpose here to recall briefly the chief characteristics of the early American public health movement. "Lest we forget . . ."

The story relates chiefly to the three or four decades preceding 1870, although it has a background reaching far into the preceding centuries. The early industrial revolution along the American seaboard, as in Western Europe, made the problems of public health more striking and more obvious

* To be read at a Special Session of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 6, 1937.

than they had ever been before. The city concentrated disease and misery, as the poorest rural areas could never do. Wherever one turned in the growing manufacturing and mercantile towns, there was the same picture. The American of 1840 read with horror of Scottish tenements, where whole families crowded into single rooms, were provided with no running water, and paid their rent by selling their own dung heaps accumulated in the courts below.[2] Yet at home, in New York City, more than half the population lived in similarly overcrowded tenements, and some 25,000 people occupied the damp and dismal cellars of these same buildings. In Cherry Street, to be specific, a five story tenement occupying only two ordinary building lots, housed 120 families, which included more than 500 individuals.[3] I say merely "individuals" for under such circumstances one can hardly speak of them as "human beings." Similar conditions obtained in the slums of other American cities, and if it were desirable these could be described *ad nauseum*.

As might be expected, such circumstances made disease problems more acute as well as more obvious. The tragic history of the major endemic diseases, typhus, typhoid, and tuberculosis, is familiar enough. So far as can be judged from the imperfect bills of mortality, urban death rates rose ominously during the first half of the 19th century. New York City, which was most inundated by poor immigrants and which grew most rapidly, again affords a striking example. In 1810, the crude death rate had been reported as about 21 per 1,000; by 1857 it had risen to around 37—an increase of almost 80 per cent within 50 years.[4] Rates were lower in Philadelphia, but higher in New Orleans. What an increasing mortality implied in morbidity rates, to say nothing of "sub-clinical illness," is obvious enough.

Such conditions and such consequences cried to high heaven for reform. In both Europe and America, a few socially minded physicians had long demanded improvements, but for some time they were unheeded. The public was apathetic: and under the growing spell of a *laissez faire* philosophy, the upper classes were inclined to let the poor shift for themselves. The latter died by the thousands of unnecessary endemic diseases; and as long as their sufferings were not too obvious or did not threaten to spread to the better parts of towns, who cared?

What was evidently needed, in order to arouse the public conscience, was an epidemic which would dramatize disease and which would also threaten to spread it uptown.[5] Tuberculosis, which was becoming the great plague of the age, was of little service here, since it killed slowly, and the fear it aroused was in no way proportionate to its fatality. Smallpox was more promising, and likewise yellow fever; but the disease which best filled all the specifications was cholera. It struck at both town and country in the most mysterious, sudden, and fatal manner. The upper classes were not entirely spared, nor could they always escape observing the sudden collapse of the less fortunate. After this disease had passed, there was usually a demand for action.

A single illustration will suffice to show why this was so. When cholera visited Bishop Polk's Louisiana plantation in 1849, there were 350 negroes there—shall we say "in residence"? Within 2 weeks, 220 contracted the disease, and no less than 70 died on this one place.[6] The conditions obtaining during such a "visitation" can scarcely be imagined, but it is a safe assumption that the Bishop felt that something should be done about it.

What could be done was none too clear. The disease moved like a con-

tagion, but it struck hardest in slum areas or among the cabins of the poor. Those who maintained the 17th century emphasis upon contagion, demanded quarantine against cholera; but this signally failed to check its spread. On the other hand, the connection between the disease and bad living conditions was too obvious to be overlooked. Hence the experience with cholera weakened the hold of the contagion-quarantine doctrine and encouraged the revival of the classical thesis concerning airs, waters, and sanitary control. Those who feared cholera or other epidemic diseases, now combined with humanitarians to demand investigations and clean-ups on a scale never demanded before. In these circumstances is to be found the genesis of the modern public health movement.[7]

The first stage in this movement was one of extensive investigation. Individual physicians had already shown the way here; notably in the case of Villermés' studies of 1828, in which he had shown that disease was to a considerable extent a function of living conditions throughout France. Similar observations were made during the 40's by Arnot and Kay in London, by Griscom in New York City, and by Virchow in Silesia. Meanwhile, Chadwick carried out his famous national survey for the Poor Law Board in England.

Since there were no national or state medical offices in the United States, surveys here could be carried out only by towns or by private organizations. The National Institute in Washington called for a wide investigation, but could secure no help from governmental authorities. It then turned to the American Medical Association, when that body was formed in 1847, and persuaded it to report on the sanitary conditions of large American cities. In consequence of its findings, the American Medical Association recommended to state and local medical societies the two procedures which seemed indicated under the circumstances: (1) that the registration of vital statistics, hitherto restricted to large towns, be undertaken by all the states in order that a clear picture of disease trends could be obtained; and (2) that sanitary reform should be pushed at once in urban and even in rural areas.[8]

State medical societies thereupon began appealing to their respective legislatures for registration laws. The American Statistical Association, founded at Boston in 1839 in response to the development of that branch of mathematics, also supported this drive. Unfortunately, the extreme individualism and often the plain ignorance of democratic assemblies blocked such efforts in most American states—just at a time when progress was being made abroad. In Georgia, for instance, the legislature "fairly hooted" when a registration bill was introduced in 1849, and the whole matter was viewed as just another "trick of the doctors."[9] Yet Massachusetts did provide for state registration in 1843, and thus set an example which could thereafter be used in other states. Incidentally, as is well known, it thus provided for the longest mortality record of state population now available in this country.

The second part of the program urged by the American Medical Association; namely, actual sanitary reform, also made some progress during the decades before the Civil War. The early fear of yellow fever and of malaria had prompted some action in seaboard towns, even before the cholera emphasized this need. When yellow fever had devastated Philadelphia in the epidemics of 1793 and ensuing years, for example, the physicians who ascribed it to local filth persuaded the city to establish a permanent board of health. They also persuaded the town

to clean up its streets, and to build one of the first free public water systems in the country. It should be noted that while Dr. Benjamin Rush and the others who insisted on the local origins of disease were partially wrong, their mistaken theories nevertheless had value in promoting urban improvements. It is also interesting to observe that, perhaps as a result of these developments, Philadelphia maintained a relatively low death rate and became known as "First in the cause of sanitary reform." [10]

Other cities followed this lead, between 1800 and 1850, in establishing boards of health.[11] These boards were, to be sure, largely of an advisory nature and had no permanent health officers save for quarantine officials; but they provided the beginnings of a permanent organization which was expanded later when the need was finally recognized. For the time being, their most common functions were to advise during emergencies, and to inspect premises for nuisances. There was little state law on medical police save with relation to licensing and quarantines, but city ordinances were passed in the tradition of the English common law on nuisances.[12]

Occasionally these boards were able to secure substantial sanitary improvements, which in turn were apparently successful in decreasing morbidity and mortality rates. A notable example is afforded in the case of Savannah. Here the death rate from "autumnal fevers" —chiefly malaria—was reported, early in the century, at the amazing average of 70 per 1,000. Assuming the airs and waters etiology, which for obvious reasons proved quite effective in this case, the city eliminated all wet culture of rice in the vicinity in 1818. The autumnal mortality thereupon fell to an average of 26 for the next 6 years, and declined even more during the ensuing period.[13]

This, to be sure, was an exceptional case. Most American towns were still lagging in sanitary improvements during the 50's, and it is rather startling to recall that places as large as Providence and Milwaukee then had no public water systems.[14] Faced by such inertia, and absorbed in difficult technical and professional problems, the American Medical Association apparently lost its first enthusiasm for sanitary reform.[15] There seemed, in consequence, to be a need for some other organization to take up the leadership in health reform on a national scale. If the majority of physicians could not be interested in public hygiene, moreover, perhaps conscientious laymen could combine with socially minded doctors to set up a national health organization.

The answer to this need was found in the interesting national sanitary conventions that met from 1857 to 1860, and which began to function as the first association in America definitely devoted to the study of public health. Wilson Jewell, who was mentioned above, saw in the meeting of an international quarantine conference in Paris a suggestion for an analogous interstate meeting in this country. State quarantine regulations varied as much as did those of different nations, and merchants as well as medical men regretted the confusion involved. Jewell called the first meeting at Philadelphia in 1857, and municipal officials and doctors from the chief Atlantic and Gulf ports responded.[16] Subsequent sessions were held in Baltimore, New York City, and Boston.

Although the conventions had ostensibly met to consider quarantine regulations, it was immediately apparent that the members were more concerned with "internal hygiene" (sanitation) than with the "external" form (quarantine). The advocates of the latter

procedure were on the defensive from the start. Contagion was never entirely denied, notably in the case of smallpox, but the majority felt that the medieval doctrine had been greatly overdone—to the serious discomfort of both passenger and mercantile interests. Dr. Arnold, the mayor of Savannah and a delegate to the fourth convention, ridiculed the few contagionists, by recalling an occasion when his "excellent old aunt had been quarantined at New York because she had the gout." He concluded by thanking God that the conventions had "swept away one of the last relics of barbarism—the infernal restrictions of quarantine." [17]

The last stand of the contagionists was attempted during the discussions over yellow fever. Since physicians lacked as yet most laboratory technics, the empirical evidence on the causes and carriage of this disease was most confusing. Dramatic indeed were the yellow fever debates at the New York meeting, which subsequently filled more than 100 pages of the proceedings. Dr. Francis of New York, a gentleman of the old school, held to the early view that he had inherited from Dr. Hosack at the beginning of the century; namely, that "a contagious principle lurks in the fever now under discussion," [18] but the younger men overwhelmed him with evidence that it was never transmitted by contact—it was never a "man to man" affair. We can now see that both interpretations were right, and both wrong—a possibility that never seems to have occurred to either side in the controversy.

Having silenced the contagionists, the sanitarians next laid down their own program. This was somewhat broader than is now usually recalled, as it included not only model laws providing for state and local health boards, sanitary regulations, and modified quarantine laws, but also provided for experimental studies of sewage, ventilation, and disinfectants, and for the passage of pure food and drug laws. In a word, the delegates were concerned with research as well as with improved administration, and were as anxious to encourage the one as the other.

Last but not least, the members of the conventions were alive to the need of educating the public, although this is now often viewed as a "recent" function of health administration. To this end, they encouraged the formation of "sanitary associations" in large cities, similar to the "health of towns" societies in Great Britain. An apparently flourishing association of this sort, set up in New York City before 1860, was active in the drive which finally led to the reform of health administration in the metropolis.

In this connection, also, it should be recalled that the sanitarians were teaching the public a naturalistic as opposed to a theological or superstitious etiology. The concept of filth as a cause of disease was a bit vague, but it was actually more tangible than even the bacteria about which the public is now so generally informed. No wonder that sanitarians scoffed at superstitious fears, and that for prophylaxis they recommended clean-ups rather than fasts.

The efforts of the convention leaders to establish their association permanently seem rather pathetic, in view of the aftermath. Jewell wrote, in 1859, that he viewed the conventions as a permanent institution "destined to revolutionize the public mind and will." The Boston meeting of June 1, 1860, heard a discussion of plans for permanent organization, and appointed a committee to submit such plans at Cincinnati in 1861.[19] Enthusiasm was growing, and all looked forward to rapid progress in the immediate future.

It was true that sectional tension along the Mason and Dixon line was increasing, but medical leaders ignored the political hubbub in Baltimore and points South. Arnold, of Savannah, presided at the last sessions, and when he concluded with gracious praise of Boston hospitality, his New England hearers gave three cheers for Georgia![20] That was about the last time that Arnold saw any Northerners, until he surrendered his city to Sherman's army one December day 4 years later. Such contrasts almost make one wish that the country had been governed by the doctors rather than by the politicians.

The outbreak of the Civil War in April, 1861, preceded the proposed Cincinnati meeting, and so the first national association came to an untimely end. Space does not permit a discussion of the diversion of public health endeavors into military channels; although this story is in itself an interesting one. Broadly construed, it includes such phases as the expansion of the Federal and the Confederate Medical Corps, the establishment by Dorothea Dix of the first trained nursing service in the United States base hospitals,[27] and, most important, the development of the U. S. Sanitary Commission.[22] That the war presented problems of public health on a peculiar scale will be obvious, when it is recalled that during the first year, five-sixths of the deaths in the Union armies were due to illness having no connection with the battlefields.[23]

The war also wrote other chapters in the history of disease and public hygiene which can be only mentioned here. There was the destruction of Southern economy and the consequent surging of ignorant rural negroes into towns, where they gave up the crude health insurance provided by the slave system and in exchange received freedom and complete neglect. Thereafter, they indulged unhindered in life, liberty, and the pursuit of the venereal diseases. Negro mortality rates rose rapidly above the white, after 1864[24]; and it is hardly exaggeration to say that only within the most recent years have some of the resultant problems been seriously attacked by the American Government.

Incidentally, the war did some good —in spite of itself, one is tempted to say. Army medicine is state medicine by definition, and numbers of promising young men like John S. Billings and S. W. Abbott attained their early interest in public hygiene as a result of army experience. Older leaders also carried on in the same field; and after the war, picked up their sanitary reform program where they had dropped it in 1860. This was easier to do in the victorious North than it was in the devastated South. In 1869, Massachusetts finally provided for the State Board of Health which Shattuck had so well planned some 20 years before. And within 3 more years, a renewed call for a national body resulted in the formation of the present American Public Health Association. The somewhat jerky continuity of this story is illustrated by the fact that Dr. Elisha Harris of New York was one of the leaders in the early Sanitary Conventions, then served as an important member of the U. S. Sanitary Commission, and finally became the Secretary of the new American Public Health Association in 1872.

Another illustration will be found in the case of Dr. Arnold, the presiding officer of the Boston convention already mentioned. During the war, he was in charge of a Confederate base hospital at Savannah; and then, in 1872, he accepted enthusiastically the invitation to join the revived public health association. As Arnold had also served as the first secretary of the American Medical Association, it is interesting to find him declaring—in

these later years—that he had long considered that organization a failure. He now pinned his hopes rather on the American Public Health Association.[25]

It is doubtful if many of those who organized this Association in 1872 could have had any realization of the great changes in public hygiene which lay just ahead of them. To their minds, they were picking up an old but promising movement for sanitary reform.[26] Now, however, as we look back upon them, the founders of the Association seem to have been inaugurating the new era that was ushered in by the bacteriological revolution.

That this revolution profoundly changed the nature of public hygiene is obvious to all. How effectively this was done is well recorded in the essays published by this Association in 1921.[27] Public hygiene entered a new and far more promising era in 1872. But for this very reason, the present generation can afford to be generous in recalling the labors and achievements of those ante bellum leaders who now appear to us as pioneers.

FOOTNOTES

1. Wilson Jewell, to John H. Griscom, Phila., Sept. 24, 1859; in *Proc., Third Nat. Quar. & Sanitary Convention* (New York, 1859), p. 5.

2. *Report on an Inquiry into the Sanitary Condition of the Labouring Population of Great Britain*, London, 1842, pp. 183 ff.

3. *Proc.* cited above, pp. 523 ff. See also J. H. Griscom, *The Sanitary Condition of the Laboring Population of New York . . .* New York, 1845. For literature relating to other cities see R. H. Shryock, Origins of the American Public Health Movement, *Ann. Med. Hist.*, n.s., I, New York, 1929, 658 ff.

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12. Shryock, R. H. *Development of Modern Medicine*, pp. 86 ff., 241 ff.

13. Gamble, Thomas, Jr. *History of the Municipal Government of Savannah, 1790–1901*, pp. 143 ff. (Included in The Mayor's *Ann. Rep.*, Sav., 1900.)

14. Cole, A. C. *The Irrepressible Conflict*, New York, 1933, p. 181.

15. On the early relation of the A.M.A. to public health reform, see *Proc., Third Nat. Quar. & Sanitary Convention*, p. 213; H. I. Bowditch's statement to the Intern. Med. Cong., Phila., 1876 (*Public Hygiene in America*, Boston, 1877, p. 37); Stephen Smith's "Remarks," *Papers and Reports*, A.P.H.A., XXII:21, 1897.

16. *Minutes, Nat. Quar. & Sanitary Convention* (Philadelphia, 1857), pp. 3–11; *Proc., Third Nat. Quar. & Sanitary Convention* (New York, 1859), pp. 3–6.

17. *Proc., Fourth Nat. Quar. & Sanitary Convention* (Boston, 1860), p. 127.

18. *Proc., Third Nat. Quar. & Sanitary Convention*, pp. 150 ff.

19. *Proc., Fourth Nat. Quar. & Sanitary Convention*, pp. 8, 13, 155. I am indebted to Dean Stanhope Bayne-Jones, of Yale University, for the proper emphasis upon the influences making for a naturalistic view of disease causation. In the paragraph above, however, I have projected his interpretation of the work of bacteriologists into the earlier efforts of the sanitarians as well.

20. *Ibid.*, p. 107.

21. Marshall, Helen E. *Dorothea Lynde Dix* (Chapel Hill, N. C., 1937), pp. 201 ff.

22. Stillé, C. J. *History of the U. S. Sanitary Commission* (Philadelphia, 1866), chaps. 1–3.

23. *U. S. Sanitary Comm. Doc.*, No. 46 (New York, 1862), pp. 5 ff.

24. See, *e.g.*, Duncan, W., *Tabulated Mortality Record of the City of Savannah* (Savannah, 1870), p. 36.

25. Arnold to Dr. Elisha Harris, Savannah, April 26, 1873, in R. H. Shryock (ed.), Selections from the Letters of R. D. Arnold, *Bull., Johns Hopkins Hosp.*, XLII:238, 1928.

26. Note the nature of the papers and reports submitted to the Association between 1873 and 1876, as summarized in Stephen Smith's Historical Sketch of the A.P.H.A., *Reports and Papers*, A.P.H.A., V (Boston, 1880), XI ff.

27. Ravenel, Mazÿck P. (ed.). *A Half Century of Public Health*, New York, 1921.

An Improved Medium for the Demonstration of Hydrolysis of Sodium Hippurate by Streptococci*

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THE majority of hemolytic streptococci of bovine origin differ from those commonly encountered in human disease in that they hydrolyze sodium hippurate.[1] Thus, when facilities are not available for serological classification,[2] tests for hydrolysis may yield data of practical significance in the examination of strains from milk which appears to have a causal relation to outbreaks of streptococcus infection. The value of the test, however, obviously rests upon the uniformity of the reaction in different lots of the test medium. Failure to secure such results under what were demonstrated to be uniform methods of preparation and of technic led to a reëxamination of the formula.

In the course of a study to evaluate procedures for the isolation and identification of hemolytic streptococci,[3, 4] the hydrolytic activity of several hundred strains had been determined according to the method of Ayers and Rupp [1] by the addition of ferric chloride to the cultures grown in 1 per cent sodium hippurate broth of the following composition:

Peptone, Parke-Davis Bacteriologic	1 per cent
Pepsin (U.S.P.), Eimer & Amend	0.5 per cent
Calcium chloride (C.P.), anhydrous	0.003 per cent
Ferric chloride (C.P.), Baker—1 per cent solution	1 drop per 1,000 c.c.
Sodium hippurate (C.P.), Eimer & Amend	1 per cent

When no evidence of hydrolysis was obtained in recent lots similarly prepared, comparative tests were made with an old, satisfactory medium, and a new, unsatisfactory one which differed in the lot of peptone used. Growth in the two media was similar and it was demonstrated that the cultures had retained their ability to hydrolyze sodium hippurate. Furthermore, the presence of catalytic agents which enhance or inhibit the reaction was not demonstrable with either of the media. Since the composition of peptone has been observed to affect other biological activities of microörganisms,[5–10] different lots and brands of peptone were compared and, at the same time, a substitute of more constant chemical composition was sought.

The experimental batches of media were prepared according to the fore-

* Presented before the Eastern New York Branch of the Society of American Bacteriologists, Albany, N. Y., April 3, 1937.

going formula with 6 different lots and 2 brands of peptone.

In testing these media the usual procedure was followed: cultures were grown in each medium for 48 hours; to 1 c.c. of culture there was then added 0.25 c.c. of 12 per cent ferric chloride solution prepared by dissolving the salt in distilled water containing 2 c.c. of concentrated hydrochloric acid per liter. As a control, cultures of each strain grown in the same basic medium without sodium hippurate were similarly tested. Hydrolysis was indicated by the formation of a heavy precipitate of ferric benzoate when ferric chloride was added to the test culture. A precipitate should not appear in the control tubes.

Little or no evidence of hydrolysis was obtained with cultures known to hydrolyze hippurate. The addition of larger amounts of calcium chloride—from 0.003 per cent to 0.015 per cent—to one of the unsatisfactory media failed to modify the reaction.[11] However, by replacing calcium chloride with 0.15 per cent dibasic potassium phosphate, which had been used by Ayers and Rupp,[1] peptone media were prepared in which characteristic reactions occurred. This substitution was not effective with all peptones and, moreover, it introduced a source of error, since phosphates are precipitated by ferric chloride.

The peptone was then replaced by asparagine.[12] Hydrolysis of sodium hippurate occurred in the asparagine medium when either dibasic potassium phosphate or calcium chloride was present. No differences were observed between the results obtained with media containing 0.3 or 0.1 per cent asparagine. The following medium adjusted with N/1 sodium hydroxide to pH 7.1 has therefore been adopted in the cultivation of streptococcus cultures for tests of the hydrolysis of sodium hippurate:

Asparagine (C.P.), Eimer & Amend	0.1 per cent
*Pepsin (U.S.P.), Eimer & Amend	0.5 per cent
Calcium chloride (C.P), anhydrous	0.003 per cent
Sodium hippurate (C.P.), Eimer & Amend	1 per cent
Distilled water	1,000 c.c.

* In the medium prepared without pepsin, no hydrolysis was demonstrable.

The experience reported in this paper emphasizes the necessity of a preliminary test with cultures of known biochemical properties for any medium which is to be used in differential studies. The control cultures in tests for hydrolysis of sodium hippurate should include hydrolytic and non-hydrolytic strains grown under conditions comparable to those used for the test cultures. Since the presence in the medium of substances such as phosphate may cause the formation of a precipitate when ferric chloride is added, cultures of each strain grown in the same basic medium without sodium hippurate should be available for comparison.

SUMMARY

A medium is described which yields uniform results in tests for hydrolysis of sodium hippurate by hemolytic streptococci. It substitutes 0.1 per cent asparagine for 1 per cent peptone in pepsin broth.

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Raw and Pasteurised Milk in Calf-rearing

AT the request of an Expert Sub-Committee of the Milk Nutrition Committee an experiment was carried out to determine if any differences could be detected between raw and pasteurised milk by the use of these milks in the feeding of calves.

The experiment was begun in October, 1935, and finished in July, 1936. Thirty-two Shorthorn bull calves from tubercle-free herds were obtained between October and January when 4 to 5 days old, grouped in pairs of similar age and weight, and one of each pair, chosen by lot, received raw milk and the other pasteurised milk. . . .

The number of pairs which completed the experiment was 11; the other 5 pairs were broken up by the death or removal for an adequate reason of one of each pair. . . .

Records were kept of the food consumed, the live weight gains, appearance of the calves, and other relevant matters. No material differences were shown between the calves receiving the two types of milk. This similarity in results is illustrated by the average daily live weight gains—the 11 calves receiving raw milk increased during the period of 6 months at the rate of 1.967 lb. per head, and those receiving pasteurised milk at the rate of 1.969 lb. per head. A full report is in the course of preparation.—National Institute for Research in Dairying, University of Reading (England), *Annual Report of Year ending September 30, 1936.*

Maternity Care in Rural Areas By Public Health Nurses*

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MATERNITY care in rural areas by public health nurses is a family service. It is assumed that the relationship to all other types of home visits is known but perhaps more than in any other classification is it truly a family visit, for every member is the concern of the mother and only in so far as the nurse is able to help the mother solve her family problems will she be successful in her maternity work.

There is always need for maternity care in any community, but in many rural areas there is no other agent than the public health nurse to teach parents the what and how and why of care. Many rural families have no newspapers, magazines, or radios to bring them health messages. If they see a physician, it is only in some emergency unrelated to child bearing.

The ignorance of rural families as to the value of maternity care, particularly antenatal care, is appalling. One nurse in New York State was called to assist a physician at the confinement of a farm woman giving birth to twins. She had had no antenatal care by physician or nurse. She lived 18 miles from the nearest physician and her only means of transportation was a farm wagon. Is it any wonder that she had not visited him? After she had been in labor for 2 hours, her husband sent her out to milk 7 cows. The twins were born 3 hours later. This was her 6th pregnancy and for only the first had she had a physician at her confinement. There was no household help and only through the insistence of the nurse would the husband consent to hire someone, so that his wife could remain in bed for 10 days. After the birth of her other children, she had resumed her full household duties in 2 days.

In addition to the ignorance of this need, many other factors contribute to the meager care which the rural woman receives. She is inclined to sacrifice care of herself to the needs of her family. A visit to a physician costs money which she is loath to spend when she can see no need. The distance to the doctor's office is great and the road conditions are poor, particularly in winter and spring. If the family owns a car, the woman usually does not drive and the husband cannot leave the farm to transport her. Her confinement is usually in the home and she makes little or no preparation. Facilities for an aseptic delivery are inadequate. Skilled nursing service for delivery and postnatal care is not available. If she were financially able to go to a hos-

* To be read at a Joint Session of the Public Health Nurses and the Child Hygiene Sections of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 5, 1937.

pital, she would be afraid to venture there. The hospital facilities in rural areas are limited and inaccessible.

The combating of these conditions is part of the service which the public health nurse, working in rural areas, must meet. Her first step is education, not only of the parents needing her assistance but of the community as well. Better care for mothers in childbirth is a community responsibility, and the effectiveness of the nurse's efforts is directly related to the facilities for care and the interest of the community at large.

It is not necessary to elaborate on the detail of the antenatal nursing visit, which is the same wherever the service is rendered. The lack of clinics and social agencies to which the nurse may turn for help in the country, however, presents serious handicaps in solving social problems. The town welfare officer is usually the only agent providing medical and material relief. He is overburdened with problems and hesitates to spend money for a seemingly well expectant mother to visit her physician or to provide additional foods in her diet.

At no time during her pregnancy does a woman want or need nursing service more than at her confinement. Unfortunately, this is the most difficult service for nursing agencies to provide. The administrative problems which are inherent in a delivery service are more perplexing in a rural area than in a city. In common with all such services there is the excessive cost, the necessity for a large nursing staff to be prepared to answer calls at all hours, the time element and the interruption of the educational service. In rural areas there are in addition other problems which are difficult to meet. Chief among these are

The distances which the nurse has to travel. It is oftentimes dangerous, particularly in the winter, when the roads are drifted and icy, and in the spring, when the mud makes them almost impassible. There is also the hazard of night driving. All travel is time consuming.

The difficulty of distributing the service evenly to cover all areas and serve all physicians. It is usually the physicians in and near the nurse's headquarters who call for the service most frequently.

The problem for arranging for day and night telephone service. There are no established directories and the toll charges are costly.

It is practically impossible to reach the nurse in the field during the day after she has left her office in the morning. Even though a place for receiving calls could be provided and her itinerary left there, few of the homes which she visits have telephones.

The service is even more time consuming than in the cities because, if a nurse finds that her patient is not in active labor and it is not necessary for her to remain in the home constantly, she might visit another home in the city, whereas in the country the distance is too great, so she has to remain through long hours of waiting.

Nursing assistance at confinement is probably appreciated by the physician more than any other phase of the nurse's maternity work. It is a most valuable aid in selling the antenatal nursing supervision service, both to physicians and the community.

Even though the delivery service is not definitely a part of the planned program for rural maternity nursing, every public health nurse should demonstrate the need for such a service by assisting at a few deliveries. This can be planned with the physician for those patients needing care most. If she is unable to be present at the confinement of her patient, it is her responsibility during the antenatal period to instruct some helper in the details of assisting the physician. A definite appointment should be made for this home visit in the early part of the 8th month. Every step should be carefully demonstrated. This presents a problem in the country because the

nurses find that the families are reluctant to decide until the last minute who will be asked to render this service which is usually unremunerative, or, after the nurse thoroughly instructs one person, the patient changes her mind and calls on someone else.

The public health nurse is responsible for the postnatal nursing care of all maternity patients registered with her. This may be actual daily care or the supervision of a helper in the home. The nurse should make plans during the antenatal period to be notified immediately of the birth of the baby, she should visit the home the same or the following day, unless a private duty nurse has been employed. She should know that the mother is receiving adequate, intelligent care. Her subsequent visits will be planned according to the need.

St. Lawrence County, N. Y., was selected for a demonstration of maternity care by public health nurses with the aid of Social Security funds because of a comparatively high birth rate, the persistently high infant mortality rate, the predominantly rural population, the large number of home deliveries and the interest and coöperation of the medical profession.

The nursing service is generalized with special emphasis on maternity nursing, including assistance at home confinements. The two methods of organizing a delivery service—one on a specialized basis, with 2 or 3 nurses assigned to answer all delivery calls or—the other on a generalized basis with each nurse responding to calls in her own district—were given careful consideration. It would be impossible to assign in strategic areas throughout a county the size of St. Lawrence even 3 nurses to serve all physicians requesting the service. For this reason, it was necessary to generalize the entire service and plan for all nurses to answer delivery calls in so far as it was possible.

The objectives in the demonstration are to learn the cost of the service; if such a service is possible and feasible for rural counties; and what methods may best be used in developing such a service.

St. Lawrence County covers an area of 2,701 square miles and, according to the 1930 census, has a population of 90,960, of which 57.6 per cent is rural. The urban population is located in 1 small city and 4 villages. There are 3 hospitals in the county, exclusive of the State Hospital for Mental Diseases and a private tuberculosis hospital, and 8 unincorporated maternity homes.

There were 1,724 resident births in the county in 1935, including 63 stillbirths; 1,030 or 60 per cent of these occurred in the rural areas, and 76 per cent were in private dwellings.

The demonstration started in January, 1937. At that time, there were 19 nurses in the county, 2 state aid to county nurses, 1 city nurse, 3 village nurses—one of whom spends half time in the schools and another whose service includes social investigation for the welfare officer—7 WPA nurses, and 6 state nurses. Some changes have been made in the nursing staff in the first 6 months of the demonstration due to resignations, illnesses, and the discontinuing of 1 WPA nursing service. On July 1, there were still 19 public health nurses working in the county, with 8 state nurses instead of 6.

The state nurses were placed in 6 centers. In selecting these centers consideration was given to the needs of the community, the other public health nurses in the area, the roads and their conditions, the location of the physicians serving the area, and the available office space with telephone service. This last factor was important because in rural areas such space is at a premium. Also to assign nurses to centers covering areas that were served

by physicians covering the same area was difficult in distributing the service evenly throughout the county. If a physician outside of a nurse's headquarters calls her at night it means that she must travel alone over lonely and dangerous roads. The physician usually takes the nurse in his car on night calls if she lives in the same village.

Nursing assistance at delivery was offered to the medical profession in local groups by the District State Health Officer, and to the individual physicians by the nurses in office interviews.

The responsibility for calling a nurse was placed on the physician since there was no central agency as a nurses' directory or visiting nurse organization, as in a city. The nurse's office and home telephone numbers were given to the individual physicians in the area which she served. This presented problems also because in some instances physicians outside of the nurse's territory would be engaged for patients whom she had under care. This would mean a long distance call for the physician.

To supply the service at all times for all areas proved impossible. It meant that if there was only 1 nurse in a center she would never be free to leave her headquarters even over the week-ends. With 2 nurses in a center it seemed impossible as well because if one nurse remained on call and went out to a delivery, there would be no one to answer a second call less than 20 or 30 miles away. Therefore, it was decided that if the nurse knew that a patient was actually in labor she should remain on call; in most instances, it has resulted in the nurses remaining within call when off duty if they even expect a patient to start in labor.

The question of how to relieve a nurse for overtime has not been answered and the accumulation of such overtime has already reached serious proportions.

To establish routine technic for nursing care at delivery, outlines were prepared, printed on cards which the nurse could carry in her bag.

A special effort was made by the nurses to find expectant mothers early in pregnancy in order to get them under medical care, if they had not already registered with their physician, and to offer nursing supervision. This was done largely by inquiry from anyone encountered in the daily routine of service. One nurse tells of stopping in a store in a small village to ask directions to the home of her next patient. In the course of conversation, she asked the proprietress if she knew of any pregnant women in the neighborhood. The proprietress replied that she herself was pregnant, that the woman across the street was also expecting a baby, and another woman up the road, and so on, giving the nurse several names at once. This nurse found 24 expectant mothers that month. When the demonstration started on January 1, there were 60 antenatal cases under the nurses' care. In the first 6 months, 272 have received nursing supervision with 137 remaining under care on July 1.

It is interesting to note the sources through which these women were referred to the nurses: 116 or 47 per cent, came under care through the physicians; 45, or 18 per cent, the nurses found; and 41, or 16 per cent, reported their condition to the nurse. Other sources averaging 5 per cent or less of the total were neighbors, family, welfare officers and other patients. One delivery call was received through the State Police.

The month of pregnancy at which these women came under nursing care shows conclusively the need for early case finding. Twenty-seven, or 10 per cent, were found before the 5th month of pregnancy; 83, or 33 per cent, from the 5th through the 7th month; 51,

or 20 per cent, in the 8th month; and 74, or 30 per cent, in the 9th month. Twelve women, or 4.8 per cent, received no antenatal nursing supervision. The calls came from the physician for assistance at delivery.

The figures for the patients under supervision for the first 6 months of the demonstration bear out the statement made previously of the large number of home deliveries in the county. Two hundred fifteen, or 77.7 per cent of these women, were confined at home; 55, or 19.8 per cent, in hospitals; and 6, or 2 per cent, in maternity homes. The nurses participating in the demonstration assisted at 124, or 43 per cent, of these home deliveries; and 7, or 2 per cent, employed private duty nurses. Eighty-four, or 30 per cent, had family care.

The time spent on labor and delivery calls has averaged 6 hours per case with 50 minutes travel time.

The problems encountered in the homes and the complications of diseases of the patients are many. In February, one nurse working in 2 entirely rural towns in the mountains reported 7 births in the area, 6 in the homes, and 1 in a hospital. The nurse assisted at all of the 6 home deliveries, only 1 of which was normal. The first patient had a cardiac condition and was unable to nurse the new baby. She also had an 11 months old child still being fed from the bottle. The second patient was a diabetic receiving insulin. The 3rd had a gonorrheal infection with condyloma and had an episiotomy with repairs. The 4th patient had severe labor pains for 2 hours daily for over a week. The 5th was normal. The 6th was a poor unfortunate whose husband was in jail. Her young brother walked a mile to phone for the doctor who at the time was setting a broken arm, so could not leave immediately. The brother called the nurse who arrived 7 minutes before the baby was born. The patient was in labor only 1½ hours. The nurse delivered the baby and had both patients cared for by the time the brother had returned after walking 2½ miles to ask a neighbor's help.

SUMMARY

This is only a preliminary report and it is early to draw conclusions from this demonstration but some of the difficulties encountered in the first 6 months may be enumerated:

The nurses state that they are unable to visit their other patients as frequently as is necessary with a heavy maternity case load.

There are insufficient nurses to give adequate antenatal nursing supervision to the number of patients registered with the service.

There is difficulty in deciding how the maternity cases should be selected in order to give adequate service.

In the rural communities, there are no organizations able to purchase material for the making of maternity packages for border-line cases.

It is difficult, with the limited number of nurses, to keep one on call for delivery service at all times for all areas.

It is difficult to provide relief during the day for the nurses who have been out on deliveries at night. This necessitates their caring for their bedside service, which is chiefly postnatal care, before they get their needed hours of sleep. It generally means that the nurse travels some distance to reach this bedside case and so she does whatever else is scheduled for that area before she returns to her headquarters. Consequently, her hours of work are long.

These are a few of the problems that have been found and are still unsolved. In meeting the complexities of starting the work, the development of community resources has received little attention thus far.

CONCLUSION

In conclusion, I would like to report the enthusiasm of the nurses for this maternity service. Those who were not much interested at first now look forward to a delivery call, even in the middle of the night. One nurse

planned her vacation so that all patients scheduled for delivery service in her district would be confined before she left. Another returned to duty after a major operation 2 weeks before her supervisor thought that she should. All are monthly increasing their maternity case load. The almost too rapid expansion of the entire maternity program is an evidence of the interest of the physicians, the people, and of the nurses themselves. Such coöperation and enthusiasm seem to indicate the ultimate success of the demonstration.

Health Congress at Birmingham

I HOPE I have not appeared to you—in reckoning these achievements of our own time—to be complacent. A Minister of Health is the last member of the Government who should ever be complacent; in all the services I have mentioned there are advances to be made, deficiencies to make up, gaps to fill. Water supplies and sewerage are satisfactory in the great majority of urban areas, but there is still much room for improvement in the villages, though I think you will agree that the recent Exchequer grant of one million pounds has made possible great advances in rural water supply. It is true that infectious disease is under firm control, but no less than three outbreaks in 1936, including the Bournemouth typhoid epidemic, with its heavy death roll were directly traced to the consumption of raw milk and their extension checked when pasteurisation was adopted. Tuberculosis, it is true, is no longer the captain of the men of death, but it still takes a heavy toll, especially between the ages of 15 and 25.

So far as maternity and child welfare is concerned, we are saving the babies, but we should like to save more of the mothers. Fortunately, the maternity death rate last year was the lowest since 1922, and the new scheme assuring a properly trained midwife for every confinement, together with the improvements in the service which should follow the report of the expert investigation published this spring, should make it lower still; I should like to express my indebtedness and that of the whole country to Sir Comyns Berkeley for the help he gave in that particular direction.—The Right Hon. Sir Kingsley Wood, Minister of Health. *J. Roy. San. Inst.,* Aug., 1937.

The Homicide Situation in the United States*

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IT may be considered rather unusual that a member of the Vital Statistics Section has seen fit to go astray from the regular fields of birth and death statistics, and attach himself to a subject which might be best discussed in an assembly of law-enforcement officials; yet, if I were to confine myself almost entirely to statistical tables, charts, curves, and intricate mathematical formulae, I might still be considered orthodox and not straying from the fold.

I am going to quote some figures, and they do not come from the pages of a weekly or monthly lay magazine, but from the U. S. Bureau of the Census, the Federal Bureau of Investigation, the Canadian Bureau of Statistics, the Registrar General of England and Wales, and from the Mississippi State Department of Vital Statistics—all of which sources are perfectly reliable.

I have long believed that we, as state registrars, should not confine our efforts entirely to perfunctory publication of dry statistics on births, deaths, marriage and divorce, but should keep our eyes open to the leading truths portrayed by our data, commending the good and condemning the evils and their consequences. In so doing, we vitalize our vital statistics, we properly serve our people, and popularize our departments.

There is also a particular reason why we should lead the way in the portrayal of conditions ordinarily not considered within the province of health officials and vital statisticians. We must remember that we live in an age which holds very few of the customs and habits of the day when health departments were first organized. At the time these statutes were enacted, no one dreamed that a day would come when the United States would suffer huge mortalities from preventable causes other than disease. We have more deaths now from accidents than we have from all the contagious and infectious diseases combined, excepting tuberculosis. Instead of being called the "State Health Department," it would be more fitting to give the name "State Life Saving Department." How much more dead is a boy or girl who has succumbed to typhoid fever or diphtheria, than is another boy or girl who has been knocked to Kingdom Come by an automobile? Therefore, I am convinced that state and city directors of vital statistics and statisticians in general should become deeply concerned with the figures that bear on preventable causes of death other than contagious and infectious diseases.

Homicide is a preventable cause of death. There were more homicides in the United States during 1935 than the grand total of deaths from typhoid

* To be read before the Vital Statistics Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 6, 1937.

fever, paratyphoid fever, typhus fever, undulant fever, smallpox, scarlet fever, and diphtheria.

STATISTICAL

1. *Numbers and Rates*—Very few states can furnish any definite statistical data on crime. Some time ago I mailed a simple questionnaire to the Attorney General in each of the 48 states, as follows:

1. Does your state provide for capital punishment, and in what form?
2. What percentage of murder cases terminate in conviction?
3. What percentage of murder convictions are appealed?
4. What is the average length of time between the act of murder and carrying out the sentence?
5. What is the average time served on a life sentence in your state exclusive of deaths in prison?
6. What percentage of persons convicted of murder and manslaughter in your state are pardoned?

What percentage are paroled?

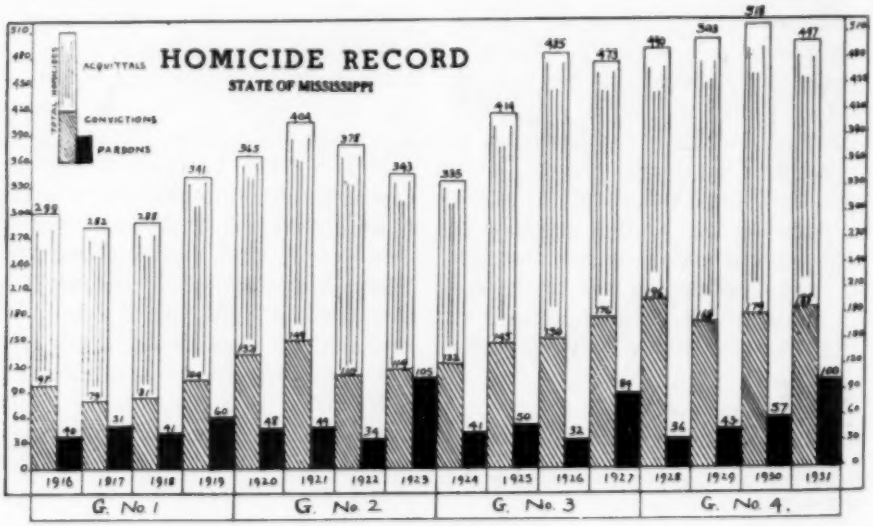
7. Do you believe that under present conditions murder and manslaughter in the United States would be greatly reduced if the Jury System were abolished and 5 regular judges were substituted for each jury?
8. To what extent do you believe alcohol is responsible for murder and manslaughter in the United States?
9. Will you please offer any suggestion you may think advisable for improving the homicide situation.

Replies were received from 28 states, but the attorney general of no state could give in full the statistics desired. Only 3 or 4 of them could answer more than half of the questions asked. In other words, I failed to get a crime picture in the United States to present to this assemblage, but I was able to learn that there is no such picture where one should really exist. Such statistics are of vast importance to the welfare of the citizens of every state.

The Federal Bureau of Investigation has been very active in accumulating statistics on crime throughout the United States. Its information is obtained principally from towns and cities, but deals only with arrests made and not with acquittals, convictions, sentences, paroles, and pardons.

My department of Vital Statistics is the only source of information in Mississippi which shows the number of homicides and the number of legal executions. This is true in most of the states.

From a study of the records of the U. S. Bureau of the Census I am



glad to find a steady decrease in homicides and in the homicide rate in the United States during the past 4 years. In 1933, homicidal deaths totaled 12,124 with a rate of 9.6 per 100,000 population. During 1936 provisional reports from all but 2 states indicate a decline in 4 years of approximately 2,000 in deaths and 1.7 in the rate. I cannot help believing that the Federal Bureau of Investigation, with J. Edgar Hoover at its head, is responsible for this favorable decline.

The state rates for 1936 vary all the way from 0 in Vermont to 25.5 in Mississippi. This is the first time in several years of observation that I have found a state without a homicide. Twenty-three states each had a smaller homicide rate than 5 per 100,000; 10 others produced rates between 5 and 10; while 15 states and the District of Columbia developed rates above 10 per 100,000. These 15 states comprise 13 southern states, with Arizona and Nevada in the West.

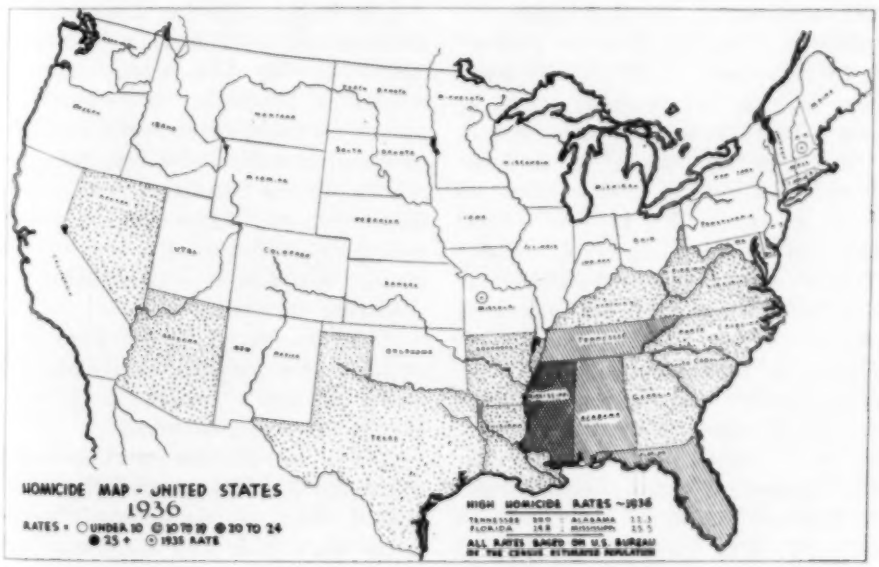
The heavy homicide rates in the South are due to the colored race. Mississippi has the highest homicide rate. It also has the highest percentage of colored population in the United States. Mortality statistics published by the U. S. Bureau of the Census for the year 1930, when populations were not estimated, show the following homicide rates: Registration Area, 9.0; white, 5.6; and colored, 36.3. Thirteen southern states that year produced homicide rates varying for whites from 5.1 to 12.3; and for colored, from 18.5 to 63.7.

HOMICIDE RATES—1930 *

Registration Area	9.0
White	5.6
Colored	36.3

	White	*Colored*
Alabama	8.4	40.0
Arkansas	8.7	28.3
Florida	11.1	56.1
Georgia	8.7	39.1
Kentucky	12.3	63.7
Louisiana	9.8	33.4
Maryland	3.5	28.4
Mississippi	8.9	35.7
North Carolina	5.1	25.0
Oklahoma	8.4	30.7
South Carolina	8.8	18.5
Tennessee	9.7	62.6
Virginia	6.9	25.7

* Mortality statistics, 1930—Bureau of the Census


HOMICIDE MAP - UNITED STATES
1936
RATES - UNDER 10 10 TO 19 20 TO 24
25 + 1935 RATE
HIGH HOMICIDE RATES - 1936
ALL RATES BASED ON U.S. BUREAU OF THE CENSUS ESTIMATED POPULATION

For 1935 the United States recorded 10,587 homicides with a rate of 8.3. The Dominion of Canada, with approximately 11,000,000 population, had only 153 homicides and a rate of 1.4. During the past year Canada's homicides were reduced to 129 with a rate of 1.3. I have been observing homicide statistics from Canada for some years, and have noted none from Prince Edward Island. I would like to live on that Island, for a while at least.

During the same year, 1935, England and Wales, with a population of over 40,000,000 had 178 homicides, and a rate of 0.4 per 100,000. Scotland with a population of 4,934,000 in the year 1934 had 22 homicides with a rate of 0.45. The homicide rate in the United States is 6½ times the rate in Canada and 20 times the rate on the British Isles. The rate in Mississippi is 64 times the rate in England, Scotland, and Wales.

2. *Penalties*—It seems that homicides are universally classified into 2 major groups, *Murder* and *Manslaughter*. Murder is usually punishable by death—by hanging, by the electric chair, by lethal gas, by gunshot, by beheading, and so forth. Often a life sentence in the penitentiary is substituted. Manslaughter is punishable by imprisonment, all the way from a few days in jail to many years in prison. There is scarcely any method by which we can arrive at a satisfactory conclusion as to how many of the 10,000 homicides in the United States per year are classified as murder and how many of them manslaughter. We only know from figures obtained from the Bureau of the Census that we have 1 legal execution to 75 or 80 homicides. Canada has 1 legal execution in about 9 or 10 homicides. For the 3 years, 1933–1935, Canada made charges of murder against 135 individuals; 58 were sentenced to death; 45 were hanged; and for 10 the sentence was commuted (perhaps to life imprisonment). Exactly one-third of those tried for murder were hanged. I might surmise that of the 10,000 homicides in the United States each year, approximately 4,000 slayers are charged with murder. Since from 160 to 170 are legally executed in the United States, we have about 1/24 of those tried for murder finally executed. A statistical report from the Registrar General of England and Wales for 1935 is highly interesting and instructive, the title being "Murder." In 1935 there were known to the police 87 cases of murder of 101 persons aged 1 year or over. Forty-one committed suicide rather than face the English courts; 21 were found insane—and I believe they were insane when so pronounced in England; 1 died while on remand; 8 were executed; the sentences of 7 were commuted to penal servitude; 3 were discharged at police court, and 6 were acquitted.

Only 9 of the 87 charged with murder escaped. No wonder England and Wales have a homicide rate of only 0.4 per 100,000 population.

CAUSES OF HOMICIDES

1. *Predisposing:* (a) Heredity, (b) Environment, (c) Illiteracy—These are the underlying foundation stones of criminality, including homicides. Of course, we could all discourse for hours on these particular conditions and their relation to the development of citizenship. It is well known that any child well born, well reared, and well educated, will scarcely ever become a voluntary criminal.

2. *Active*—Among the active causes of homicides may be mentioned robbery, revenge, jealousy, gambling, drunkenness, and immorality.

3. But by far the most prevalent cause for homicide, especially in the United States, is the lack of law enforcement. One who runs may read

the truth in this statement in the statistics already given with reference to penalties enforced in the United States against murder as compared to those enforced in the Dominion of Canada and in the British Isles, and to the wide variance in the homicide rates in these particular countries.

H. L. Mencken, writing in *Liberty Magazine* (July 28, 1934), suggested that "the United States try the simple experiment of executing the criminal laws as they stand." "Let them be enforced," he said, "for 1 year running, diligently, resolutely, and according to their letter, and crime will become so hazardous that only actual lunatics will engage in it. Let them be enforced in any given state for even so little as 6 months, and criminals will avoid it."

Our laws are ample and sufficient. Our police apprehend at least 90 per cent of those suspected of crime, and yet with 10,000 homicides in the United States per year we have only about 170 legal executions. At least 2,000 murderers should be executed in the United States every year. There are too few convictions; too much "Sob-Sister Sentimentality"; too many pardons and suspensions; too much lax enforcement of laws against crimes that lead to killing, such as gambling, drunkenness, and carrying concealed weapons. There are too many delays, too many technicalities, too much archaic court procedure, too much dodging of jury service by intelligent citizens, and there are too many shyster lawyers engaged in the highly remunerative practice of defeating justice.

Three or four years ago, I made a study of the homicide situation in Mississippi covering 16 years—1916–1931, inclusive. My information was compiled from our Department of Vital Statistics, showing the number of homicides annually during that time; from the records of the State Penitentiary showing the number of individuals committed for murder and manslaughter and from the office of the Governor where records were found of all pardons granted during the 16 years. The net results of this study show that there were 6,415 homicides, 2,190 convictions, and 871 pardons for homicides. During the time the state population increased 13.5 per cent while homicides increased 66 per cent. Of these 6,415 killers, 4,225 escaped all punishment, 2,190 received more or less punishment, and only 60 were hanged. Twenty-one hundred and ninety were sent to the penitentiary for murder and manslaughter. The manslaughter sentences averaged 9 years and 8 months. About 150 either permanently escaped or died; 330 were pardoned after serving an average of 3½ years; 37 were free under suspension of sentence. Of the 1,083 convicted murderers imprisoned for "life," exactly half were pardoned after serving an average of 7½ years, 297 escaped or died, 74 were free under suspension; only 171 of the 1,083 "lifers" were still in the penitentiary at the close of the time.

I firmly believe that if a like study were made in every state in the Union, we should find similar consequences in a majority of them.

REMEDIES SUGGESTED

I regret very much that my time is so limited that I cannot bring out additional facts with reference to the homicide situation in the United States. It must be conceded by all that our court system needs a radical revision so that it will not rest so heavily upon the foundations of moss-back traditions. It needs to be rejuvenated and made to work with clock-like regularity, so that any suspected criminal may have a speedy trial and receive without delay the just rewards of his transgression. The certainty and speed of

punishment is one of the greatest deterrents to crime. It is my honest conviction that the Constitution should be amended so as to dispense with the Jury System. If we had from 3 to 5 learned and upright judges to hear every case in law, the shyster lawyer would be doomed immediately, and justice would be executed with that swiftness and certainty which we all desire, and which will spell the end of 50 per cent of crime in the United States within 2 years. Practically 90 per cent, if not 95 per cent, of all murder convictions are appealed to the Supreme Court anyway; so why is it not possible for from 3 to 5 judges to pass on the innocence or guilt of the accused in the county in which the deed was committed?

Martyrs to Science

DEATH has claimed the lives of 17 members of Public Health Service personnel as the result of disease contracted in connection with research. These were:

Yellow Fever:

Dr. Roswell H. Waldo, 1878
Dr. W. C. W. Glazier, 1880
Dr. W. T. McAdams, 1889
Dr. John W. Greenvelt, 1891
Dr. J. W. Branham, 1893
Dr. W. M. Wightman, 1909

Typhoid Fever:

Dr. T. F. Richardson, 1906
Dr. William W. Miller, 1908

Tuberculosis:

Bacteriology Technician William Lindgren, 1928 (infected while making transplants of and inoculating animals with virulent human cultures; died 6 years after infection)

Smallpox:

Attendant Mason, about 1921

Rocky Mountain Spotted Fever:

Dr. Thomas B. McClintic, 1912
Laboratory Assistant W. E. Gettinger, 1922
Laboratory Assistant George W. Cowan, 1924
Bacteriologist L. A. Kerlee, 1928

Tularemia:

Laboratory Attendant Martin Lindahl Nolan, 1931

Meningitis:

Nurse Edith M. Hartzel, 1921
Assistant Bacteriologist Anna Pabst, 1935

Psittacosis:

Laboratory Attendant Harry Bernard Anderson, 1930

—*The Health Officer,* Sept., 1937, p. 185.

Vaccines Against the Common Cold*

Are They of Value in the Industrial Health Program?

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IN introducing this subject, attention is called particularly to the form and wording of the subtitle, which implies at the outset that there has been and still is considerable doubt as to the scientific value of vaccines against the common cold. Moreover, it should be noted that the question herein considered is not so much their value in actually preventing the common cold as their possible effect in reducing length and severity of disability from diseases of the upper respiratory system which, as a group, cause the greatest amount of time lost from work among the industrial population, and constitute the chief health problem with which industrial management in general has to contend.

As indicated previously,[1] reducing absenteeism due to colds is an undertaking that requires the coöperative efforts of individual employees and of management. The employees' responsibilities should be concerned with learning everything possible with reference to colds and their prevention, control and medical treatment; and putting the knowledge gained into continuous practice. Management's opportunities in such a coöperative program will be found largely in assisting employees to learn all of the facts regarding colds; in calling attention periodically and seasonally to the seriousness of the problem and the need for medical care; and in adopting certain administrative and supervisory procedures which at least will tend to reduce the duration and severity of these conditions; all of which involves a well rounded program of health education and of health supervision. At the most, the use of vaccines can be but a small part of the program, which should stress particularly the development of good health habits and the building of general resistance to infection.

METHOD OF STUDY

In this study of the possible value of cold vaccines in the reduction of industrial sickness disability, exact scientifically controlled methods of experimentation were impossible. However, in an endeavor to be of some assistance to industrial management and industrial medical departments in their consideration of the subject, a brief survey of the general experience of several associated companies in the Bell Telephone System has been attempted. The data presented are based largely on the opinions and actual experience of management, medical personnel, and employees, formulated over a period of several years, as

* Chairman's Address to be presented before the Industrial Hygiene Section of tht American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 7, 1937.

to the possible benefits derived from such vaccines. Until colds are scientifically classified from the standpoint of causes; until the diagnosis, reporting, and treatment of colds come to be medical, rather than personal lay matters; and until accurate statistical data and comparative control records become available, the apparent results achieved through any preventive measure, such as the use of vaccines, must be based on empirical knowledge and generalizations founded on somewhat limited scientific facts.

MATERIALS AND ADMINISTRATIVE PROCEDURE

In all instances covered by this study, standard stock vaccines or serobacterins from cultures of the common pathogenic microörganisms of the respiratory tract, prepared and distributed by various reputable commercial laboratories, have been given according to accepted methods of administration and dosage, the commercial products used differing in each company. In all cases such vaccines were made available only to those employees or their physicians who voluntarily requested them, no particular attempt having been made to promote their use on a company-wide basis. Vaccines have been administered to company employees largely by local practising physicians, an arrangement having been made whereby the companies either supplied the vaccine and paid the physician, or the employee paid a nominal sum to cover the cost of materials used. The chief interest of the companies has been to encourage and to assist in any measure that might decrease sickness disability among employees and to coöperate in making surveys of possible results.

EXPERIENCE OF COMPANIES

Six companies have made vaccines available on the special request of employees or their family physicians, for different lengths of time. The following quotations summarize the general experience of such companies:

Company A—Vaccines made available yearly for the last 6 years to approximately 1,400 employees. A representative states:

> Management has coöperated with employees in a program of cold inoculations. The general results indicate that such vaccines are very effective in certain instances, and wholly ineffective in others. Perhaps fifty-fifty is a measure of their efficiency.

Company B—Vaccines made available yearly for the last 8 years to approximately 2,800 employees. A representative states:

> Results during our 8 years of experience indicate approximately 85 per cent of employees develop some degree of immunity. Briefly, our experience thus far indicates a decidedly worth while advance in the control of colds.

Company C—Vaccines made available yearly for the last 17 years to approximately 13,000 employees. The medical director states:

> We send out every spring to each person who was inoculated the previous fall and who is still in our service, a simple questionnaire form which is answered relative to the past season's experience with colds, and returned to us for tabulation and study. Each year there have always been more than one-half who said that they were benefitted. Some years the percentage of absolutely favorable replies has run up to 80 per cent. From 3 to 10 per cent each year report colds as bad or worse than previously, while the balance note no change in the incidence, length or severity of colds.

Company D—Vaccines made available for several years to a very limited number of employees, on request of family physicians. The personnel director states:

> The bulk of opinion is that those inoculated have been somewhat helped—that colds, if suffered, have not been so severe.

Company E—Vaccines made available yearly for the last 5 years to ap-

proximately 1,800 employees. The personnel vice-president states:

> Our 5 years' experience has indicated that respiratory disorders may be lessened in severity but not greatly in incidence in the average individual. Vaccines can do no harm when given under strict medical supervision, and certain individuals will derive some degree of benefit.

Company F—Vaccines made available yearly for the last 10 years to approximately 1,100 employees. In one area of this company the medical officer states:

> There is every reason to believe that most of those vaccinated against colds have secured relief to some degree.

In another area the medical officer states:

> My observations have been that in about 50 per cent of the cases the introduction of a cold vaccine or bacterin, administered early in the fall, seemed to prevent the development of the common cold for a varying period of time. My personal opinion is that so few scientific truths have been obtained definitely to settle the values accrued from the use of these substances that I should not like to put myself on record as stating that they are a true preventive of the common cold.

DISCUSSION

Is it possible to reconcile the varied experiences brought out with the generally accepted facts regarding the etiology of colds and the specificity of immunity? How can a vaccine prepared from cultures of the usual pathogenic microörganisms of the upper respiratory tract, such as pneumococci, streptococci, staphylococci, hemophilus influenzae, and *Micrococcus catarrhalis* stimulate immunity to the common cold, supposedly due to a filterable virus, according to the original suggestion of Kruse,[2] subsequently corroborated by Dochez [3] and his coworkers?

In basing a study of this nature on the experience and history of illness reported by individuals, rather than on accurate medical examinations, diagnosis, and statistical records, the inaccuracies due to faulty memory should be taken into account. An individual, for example, in reporting some months hence on his history of colds for the past season following inoculation will base his conclusions almost entirely on duration and severity, rather than on incidence; a mild coryza of a day or two may be entirely forgotten, while a week's absence from work on account of more severe respiratory illness will be easily remembered. Thus, the favorable effects of inoculations noted by the companies covered may be more significant from the standpoint of reducing length and severity of disability than from that of cutting down the incidence or number of cases.

Results of experimental investigations suggest the probability that the cold virus, whatever its exact identity may be, has the power to activate the bacteria present in the upper respiratory passages. If the virus serves to activate and make more virulent these common pathogenic inhabitants of the nose, throat, and sinuses, and a vaccine made up of secondary bacteria serves to combat or make less virulent these latter organisms, may not one of the ultimate results be an indirect check on the unfavorable influence of the virus itself?

Authorities are fairly well agreed that bacterial vaccines often raise resistance against the secondary disease producing microörganisms, and thus limit inflammation, severity, duration and complications. Kneeland [4] was able to demonstrate experimentally that an intensive course of vaccination with the pathogenic bacteria of the upper respiratory tract modified favorably a winter outbreak of severe respiratory disease in an infant population of a foundling home where scientific control and observations were available. While the incidence or frequency of the com-

mon cold was not affected, the severity was definitely reduced. Niles [5] believes that bacterial vaccines often raise the immunity against the secondary pathogens and thereby limit their invasion of the inflamed tissues, thus reducing severity, duration, and complications of colds. He has not found that autogenous vaccines are superior to the usual stock vaccines. Industry is interested not only in reducing incidence and frequency of sickness among employees, but many, if not most, of its losses in money, time, and efficiency are due to the duration and severity of disability among the working forces.

Any industrial group may be divided roughly into: (1) the cold-proof or those who never seem to have a cold; (2) those with average susceptibility who have one or two minor colds a year; and (3) those cold-prone individuals who suffer from several colds each year, often followed by complications and repeated disability and absence from work. In studies that have been made it has been shown that the cold-prone individuals may approximate as much as 25 per cent of a group. It is they who constitute the continuing year-round reservoirs of the common cold, and who may contribute to the spread of colds that appear in the late fall and winter months. It is primarily at these cold-prone employees that management's program of reducing absenteeism should be aimed. They should be strongly urged, if not required, to seek the guidance, advice, and treatment of their family physicians, in order to reduce to a minimum repeated attacks and prolonged disability and absenteeism, as well as the possibility of being sources of the disease in others. The importance of good health habits, proper ventilation, a daily diet including milk and plenty of fresh fruits and vegetables, as well as extra nourishment through the use of cod liver oil, attention to diseased tonsils or sinuses, increased alkalinization of the body, and ultra-violet radiations, where needed, should be stressed.

SUMMARY AND CONCLUSION

This study of experiences with and results from vaccines against the common cold among workers in industry indicates an apparent reduction in the severity, duration, and complications of acute respiratory diseases. There is little evidence that such vaccines have materially reduced the incidence of the common cold.

Until immunologists can provide us with a vaccine or serum directly to combat the virus and the incidence of the common cold, we possibly shall have to be satisfied with a half-way attack on the acute respiratory diseases in general through the use of vaccines against the well known secondary disease producing bacteria; in so doing we may help to prevent complicating infections and indirectly offset the supposed virulence stimulating action of the virus on these bacteria. To the extent that such vaccines reduce length of disability and absence from work, they apparently may be of some value in the industrial health program. While no one procedure alone, such as the use of vaccines, should be relied upon entirely to build resistance against colds, a broad program of preventive treatment should be encouraged particularly among cold-prone employees, in cooperation with their family physicians.

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Staphylococci in Raw Oysters

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AT the close of 1931, the attention of the San Francisco Department of Public Health was drawn to the shellfish industry as a result of cases of typhoid fever occurring with a frequency considerably above the expected for that period.[1] The use of raw shellfish was admitted by almost 50 per cent of those affected, and epidemiologically this food constituted the most frequent source of possible infection.

The studies that yielded information on real and potential sources of infection were those made on oysters and clams, so the usual routine laboratory examination of oysters was supplemented by examinations for *Staphylococcus aureus* and members of the *B. typhosus* and *B. paratyphosus* group. Previous to this outbreak, inspectors obtained occasional samples of oysters at local wholesale distributing and shucking plants, representative of the oysters shipped from certified areas to San Francisco. Examination for *B. coli* was carried out and corresponding oyster scores were reported routinely.

In December, 1931, *Staphylococcus aureus* was reported in a sample of oysters native to the shores of the Pacific Northwest, also in a sample of foreign frozen clams. Though the sampling of oysters and laboratory examinations continued uninterruptedly on a bi-weekly basis, no finding of staphylococci was noted until the latter part of April, 1937, when *Staphylococcus aureus* was reported in a sample of native California oysters gathered from a small bay 40 miles north of San Francisco. This area had been the source of a large portion of the native oyster supply for the San Francisco market. Careful inquiry elicited no reports of illness from this particular lot of oysters and, furthermore, the entire lot of oysters was consumed before the laboratory report became available. Routine oyster scores from this district had always been well below the maximum allowed for certified oyster beds. Field investigation was immediately made and many samples of oysters were examined. Oysters from other areas were also examined more frequently than usual. Additional positive findings of *Staphylococcus aureus* were reported during May and June, 1937, from oysters taken from the beds 40 miles north of the city as well as from those shipped from the Pacific Northwest, and from so-called eastern oysters transplanted in the waters of San Francisco Bay, southeast of the city.

Sanitary survey of the area north of the city, from which the first staphylococci were reported, indicated a well protected bay, the shores of which were sparsely inhabited and the amount of sewage negligible. There appeared to be sufficient dilution, and favorable currents carried whatever surface drainage was present around and beyond the oyster beds to sea. The area from which oysters were gathered was approximately 3 miles long. The area from the north point of this shore

for a distance of approximately 400 feet south constituted an isolated section from which the positive findings were reported. Samples from other portions of the area were free of contamination. The gathering of oysters from this particular section was prohibited, and continued sampling has to date failed to disclose further positive findings from this source, or from other beds.

SUMMARY

The results in the laboratories of the Department of Health and the George Williams Hooper Foundation of the University of California were practically identical, as follows:

Culture 1, isolated from unshucked oysters, source S.B., produced no toxin.

Culture 2, source S.B., generated toxic substance which, on intraperitoneal inoculation of kittens, induced vomiting twice after 75 minutes.

Culture 3, from oysters, O. type, and *Culture 4* from oysters, P. type, also *Culture 5* from the same sources, all proved to be non-toxic.

The toxin was prepared in the most suitable medium containing starch and incubated under carbon dioxide. In order to prove that these cultures might produce poison in an oyster medium, oyster infusion was prepared but, although the organism grew very well at 37° in the medium, no toxin was demonstrable.

From these observations it is possible to conclude that although occasionally toxin producing staphylococci may be found in oysters, they are unable to grow in oysters and cannot produce toxin injurious to human beings. These observations are substantiated by the epidemiologic facts.

DISCUSSION

In December, 1931, and again in April, May, and June, 1937, *Staphylococcus aureus* was reported positive in samples of oysters of several types from the various districts supplying shellfish to the San Francisco market. Sanitary survey of these areas did not disclose any particular sewage or drainage affecting the oyster beds.

Experiments on animals with cultures of *Staphylococcus aureus* isolated from the oysters proved the cultures to be non-toxic or mildly toxic to kittens after intraperitoneal injections. Epidemiologic findings fully substantiated the laboratory results.

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A Bacteriological Survey of Telephone Instruments under Various Conditions of Use

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THE possibility that the use of the telephone instrument may be a factor in the spread of communicable disease has engaged medical attention for many years.

A number of studies have been made of the bacterial flora of telephone instruments in both public and private use, in the belief that data on the numbers and types of bacteria, especially pathogenic varieties, which may be cultivated from the telephone instrument would serve as a valid basis for conclusions as to any sanitary risk there may be in using the telephone. The conclusions which have been drawn from these studies have been widely divergent. Some investigators have concluded that the telephone may be an active agent in the spread of disease, while others regard the risk as slight or negligible.

The pathogenic bacteria whose transmission by the telephone has been thought to be possible had been discovered many years before the first bacteriologic studies of the telephone were made, and the technical procedures required for their successful cultivation have been available to bacteriologists generally. Uncertainty as to the existence of any sanitary hazard of the telephone might therefore be thought to depend on the difficulty of interpretation, rather than on the incompleteness or the unreliability of the bacteriologic data.

A review of the literature of the subject, however, including a number of reports of special investigations, discloses a lack of agreement among the various authors as to the occurrence of pathogenic bacteria upon the telephone instrument. It is worthy of note that no positive findings (with one possible exception) of pathogenic bacteria were reported from the earlier studies, while the later investigators, beginning with Saelhof [1] in 1921, have been able to recover pathogens from the telephone. The earlier workers appear to have assumed that their technical methods were suitable for the recovery of pathogenic bacteria, but no tests were made, so far as we have been able to ascertain, to prove that this was the case. The possibility that the technical methods in common use might be inadequate for this purpose was first mentioned by Vasica and his associates [2] in 1933. Doubt on this point is implied, moreover, by the action of each successive investigator in carrying out bacteriologic studies with little or no reference to preceding reports.

It seemed necessary, therefore, as a first step in the present investigation, to undertake an independent study of

the bacteria found on the telephone instrument and to make use of methods of culture which would leave no room for criticism as to their adequacy.

It was the aim of the present survey to secure information as to the bacterial flora present on telephone instruments under the ordinary conditions of use. No consideration has been given in the studies reported here, to filterable viruses.

The selection of telephone instruments for examination was so made as to include situations which afforded a wide range of environment, such as the geographical location within the city, the frequency of use, and the exposure of the instrument to humidity, heat, light, dust, or other physical factors. Two hundred and forty-six instruments were examined in New York City. The majority of these were public. They were situated in office buildings, department stores and small shops, in hospital operating rooms, dispensaries and laboratories; in the Interborough Subway, and in the New York Central and Pennsylvania Railway Terminal buildings. The telephone instruments were situated in exposed locations in corridors or office rooms, or were located in booths which stood separately or in groups as in the larger buildings. In many instances statistics were available as to the number of out-going calls made over the instrument studied; these ranged from very small numbers to approximately 6,300 per month. Cultures were made every month of the year from January 1, 1935, through June, 1936. A number of examinations were made of telephone instruments elsewhere than in New York City which supplied corroborative evidence.

Throughout we endeavored to maintain in the field the same care in technic as exercised in the laboratory. Cultures were taken with a sterile swab moistened in sterile nutrient broth. The inner surface and rim of the mouthpiece, or the outer surfaces of the earpiece were wiped with the moistened swab. A portion of the surface of a blood agar plate was streaked with the swab and the inoculum then spread evenly over the plate with a platinum loop sterilized in the flame of an alcohol lamp. If the swab was streaked over the entire surface the colonies were usually so numerous that enumeration and isolation in pure culture was impossible. Uniform technic was maintained to make sure that the results of experiments made at different times and on different telephones would be comparable.

The plating medium was hormone agar enriched with 5 per cent defibrinated rabbit blood and in some cases with 0.25 per cent dextrose to favor the growth of the mucoid phase of the bacterial colony. The blood agar plates were prepared a short time before leaving the laboratory, and kept sealed with adhesive tape during transport to avoid drying and contamination. While it was not necessary to use a rich medium for the recovery of saprophytic forms, the medium used was the most favorable for the isolation of pathogenic bacteria found in the human upper respiratory tract.

The plates were incubated at 37° C., since this would favor the growth of pathogens or closely related forms. A lower temperature would have favored the growth of saprophytic organisms which, according to Vasica, *et al.*, outgrew the organisms developing at 37° in the ratio of 2½ to 1. Several colonies of each type of microörganism were fished, and identification was made according to *Bergey's Manual*, and in some cases by serological methods.

After streaking the plates the swabs were placed in a medium consisting of hormone broth with 10 per cent normal horse serum and 1 part in 500,000 of

gentian violet (Carrod [3]), which facilitates the isolation of the hemolytic streptococcus from mixed culture. After 18 hours' incubation at 37° C. rabbit blood agar plates were inoculated with a loopful of the broth culture. If hemolytic streptococci were found, colonies were fished to broth tubes, incubated, replated for purity, and kept as stock cultures in blood broth.

The numerical results are summarized in Table I. The data are grouped according to the season of the year and by the number of outgoing calls per month made on the instrument examined. The counts do not represent the total number of organisms on the mouthpieces but are based on the technic described above. Since this technic was carried out with particular attention to its uniformity, the counts are comparable among themselves and represent a constant fraction of the total number of organisms actually present.

showed small differences within a single group, while the average values of the various groups showed considerably greater differences. In the Radio Corporation of America Building, for example, a series of 7 booths gave counts below 60 per instrument with an average of 32, while in the Long Island Railroad Station the figures for 5 instruments lay between 132 and 924, with an average of 500. The difference between these two series may be due to the fact that in the former the telephone booths are in compartments which are supplied continuously with air freed of dust by "air-conditioning," while in the latter the dust from the concourse may be carried readily into the booths.

In general the numbers of bacteria found on telephone instruments in widely separated localities and in various surroundings showed small differences, and our attempts to establish a correlation between the total numbers

TABLE I

Classification by Frequency of Use of Instrument of Data Obtained from Bacteriological Examination of Telephone Mouthpieces—December, 1934, to October, 1936

Number of Calls per Month	*Number of Telephone Mouthpieces Examined*	*Counts*			*Total Streptococci*	*Total Other Pathogens*
		Highest	*Lowest*	*Median*		
Less than 100	131	1,000	0	43	49	26
100– 500	22	1,000	10	30	2	4
500–1,000	42	2,000	2	54	5	24
1,000–2,000	24	920	1	130	7	11
2,000–4,000	15	300	7	59	3	1
4,000–6,000	11	730	24	170	1	1
Over 6,000	1	160	..	...	0	1
Total	246	2,000	0	53	67	68

In grouping the data the environment of the instruments has been ignored since a study from this point of view showed that no consistently significant difference in counts could be demonstrated. In some instances, it is true, the numbers of bacteria obtained from telephones in booths grouped closely in one corridor or floor

of bacteria and any characteristic of the environment met with little success. On the basis of the social and economic status of the patrons, the telephones on the lower East Side of New York City may be contrasted with those in the R.C.A. Building. In the former locality, telephones in diverse situations including a public bar, small shops and

restaurants, gave an average value nearly as low as did those in the air-conditioned R.C.A. Building.

In a small number of cases, enumerations of the bacteria on the earpieces gave figures considerably higher than those for the corresponding mouthpieces in the average ratio of 3 to 1.

Our results are recorded in Table II. They are contrary to those of Saelhof and of Thiroux and Rissler [4] who found many more bacteria on the mouthpieces than on the corresponding receivers.

The same attitude was taken toward the numerous varieties of sarcina recovered, many of them pigment formers.

Diphtheroid bacilli belonging to the *C. xerosis* of *C. hoffmannii* groups were encountered in the plates made from almost every instrument. The true diphtheria bacillus was not recovered in a single instance. Although Loeffler's blood serum was not used as a selective medium, our use of blood agar plates should have made the recovery of this microörganism possible if it were present.

TABLE II

Classification, by Frequency of Use of Instrument, of Data Obtained from Bacteriological Examination of Earpieces

Number of Calls per Month	*Number of Telephone Earpieces Examined*	*Counts*			*Total Streptococci*	*Total Other Pathogens*
		Highest	*Lowest*	*Median*		
Winter 1934–5						
Less than 100	2	197	90	144*	0	0
300–1,000	1	19	..	19	0	1
Total	3	197	19	90	0	1
Spring 1935						
Less than 100	6	6,000	15	360	0	0
Summer 1935						
Less than 100	3	32	5	19†	0	1
Winter 1935–6						
Less than 100	3	46	19	27	0	7
500–1,000	1	1,440	..	..	0	4
Total	4	1,440	19	25	0	11
Summary	16	6,000	5	..	0	14

* Mean instead of Median
† Based on two instead of three figures

The bacteria recovered from instruments represent many genera and species. The genus Micrococcus yielded the largest numbers both of species and individuals. This observation was made also by Vasica and his associates who distinguished numerous species of cocci on the basis of pigment production. Although the range of chromogenesis in our cultures was wide, it did not seem profitable to attempt a sub-division of the cocci on this basis.

Gram-negative diplococci, belonging in all probability to the genus Neisseria, were found with about the same frequency as the diphtheroid bacilli. Streptococci, including hemolytic and non-hemolytic varieties, and pneumococci were occasionally found. These will be considered in detail in a later section.

Members of the subtilis group were encountered very frequently, being present almost invariably on mouth-

pieces which were covered with dust. With this exception it was not possible to correlate the presence of bacteria of any of the groups mentioned with any feature of the environment.

No attempt was made to recover the tubercle bacillus. It was felt that this could be properly attempted only when made the subject of a special investigation.

With regard to the origin of the various microörganisms recovered, our knowledge is very incomplete. It is known that the bacilli of the subtilis group have their home in the soil and other locations outside the human body. Cocci of the types recovered as well as diphtheroid bacilli are found with great frequency in cultures made from the throats of healthy human beings. It was not certain, however, that their occurrence on the telephone was from this source.

In the hope of throwing light on this and on other points, experiments were carried out in which conversations were held over a telephone system installed in the laboratory with the transmitters placed in opposite corners of a large room. The mouthpieces were sterilized, and were cultured immediately after use. The experiments were repeated with many variations, in the endeavor to reproduce the conditions of actual practice. The length of the conversation, the pitch of the voice, and the character of words used were varied. More than 10 different individuals took part in the experiments.

Two types of mouthpieces were used, black bakelite and glass. These were cleaned and sterilized, and used without further treatment. They were cultured by swabbing as described. A number of experiments were carried on with mouthpieces of these two types which had been covered with nutrient agar. The coating of plain or rabbit blood agar was applied by dipping in melted agar, or by pouring the agar into the space left between the inner surface of the conical portion of the mouthpiece and a sterile paper cone, which was removed as soon as the agar had congealed. Immediately after use the agar covered mouthpieces were placed in dust-proof sterile containers and incubated. By counting the colonies that developed on the agar the actual number of bacteria deposited was determined directly. This method had the further advantage of avoiding exposure of the bacteria to drying or other deleterious influences, and lessened the possibility of change in the colonial type (M, S or R).

The types of bacteria recovered with sterilized mouthpieces were of the same varieties as those found in the field survey, and here also saprophytes predominated. These varieties may be obtained by direct culture of the nasopharynx of the majority of healthy individuals, and it is evident that some of the bacteria which occur on telephones come from this source. In a number of cases in which the speaker was known to be carrying a pathogen, this microörganism was recovered from the mouthpiece.

Large differences were noted in the number of colonies on the mouthpieces used by different individuals, both when the enumerations were made by swabbing the mouthpieces and streaking agar plates, or by direct counts of the colonies on the agar covered mouthpieces. Some individuals gave low counts with regularity, while others gave consistently high ones. In different conversations of a given individual relatively large numbers were deposited when sibilant sounds were especially numerous or were spoken with particular emphasis, due to variations in the amount of saliva thrown out in droplets.

The counts obtained after a 3 minute conversation ranged from low to the neighborhood of 2,500; counts between

20 and 200 were more frequent than either smaller or larger. Since uniform methods were used in this part of the work and in the city-wide survey, it seems possible to say that the numbers found on the mouthpiece of a public telephone are frequently such as might have been deposited during a single conversation.

Inasmuch as the great majority of the bacteria found on telephone mouthpieces are saprophytic forms which tend to overgrow pathogens in cultures, in order to detect pathogenic varieties it was necessary to use the special procedures described in the section on technic. No one technic or culture medium is suitable for the recovery of all of the varieties of pathogens which occur in the oro-pharynx and might be deposited upon the telephone instrument, but the use of rabbit blood agar plates permitted the recovery of certain common varieties.

Although diphtheroid bacilli were encountered frequently, no true diphtheria bacilli were found. Among the Neisseria which appeared frequently there may have been forms identical with or closely related to the meningococcus. There is so much uncertainty as to the significance of the diplococci in the oro-pharynx which are culturally indistinguishable from the meningococcus, that it did not seem advisable to study these bacteria in detail. Interpretation of the sanitary significance of these groups at present is subject to serious limitation.

Potential pathogens of the pneumococcus and streptococcus groups, however, can be identified with little difficulty. They deserve especial consideration because of the extent and the variety of the diseases which they produce, and because the upper respiratory tract is frequently the portal of entry for infection. Particular attention was accordingly paid to the recovery of these varieties.

Pneumococci were cultured from the transmitters less frequently than either the staphylococcus or the streptococcus. They appeared only in specimens collected in the winter and spring, and their occurrence, therefore, bears a significant relation to the seasonal peak of pneumococcus infection in New York City. Pneumococci were found in considerable numbers (in 19 instruments, or 52 per cent) in a survey made in March, 1936, and in a culture from 1 instrument, out of 125 colonies, 110 were the pneumococcus. In the cultures from another transmitter 4 of 7 colonies were pneumococcus. It was not possible to determine with any certainty the type of the pneumococci recovered because the antisera available were not sharply type specific, and the demands of other phases of our investigation made it impossible to carry the typing to a satisfactory conclusion.

Hemolytic streptococci were recovered from telephone mouthpieces with considerably greater frequency than were pneumococci. In cultures from 246 telephone instruments, this streptococcus was found in 67. No relation could be made out between the location of a telephone or any characteristic of its environment, and the presence of this organism, but there was a marked seasonal variation. It was present in only a few instances in the summer or autumn, with the exception of August, 1935. During the winter and spring, the streptococcus appeared frequently on telephone instruments, corresponding to the rise in the incidence of the streptococcus in the general population, as found in our observations and those of our colleagues (Coburn and Pauli). On January 21, cultures were made from 7 telephone instruments, 6 of them yielding the hemolytic streptococcus, and not only were the total numbers of bacteria of all sorts greater, but the

percentage of the hemolytic streptococcus was higher than in a survey made earlier in the month when the streptococcus was present on only 6 of 14 instruments examined. These findings can be interpreted in the light of the observation of Coburn and Pauli (personal communication) that during the week January 15–22, 1936, the incidence of the hemolytic streptococcus in the oro-pharynx in a group of patients in a convalescent home, showed a 40 per cent rise over that in the preceding week. On February 2, 1936, 18 out of 26 telephone instruments yielded the hemolytic streptococcus. In cultures made during March, 1936, pneumococci were more numerous than streptococci. A large number of hemolytic streptococci also were found during this period, in some cases the plates showing almost pure cultures of this microörganism. In April no recoveries of hemolytic streptococci were made from the telephone instruments. This corresponded to the decrease reported in the incidence of this pathogen in the oro-pharynx of patients in a dispensary in the city. Only 8 of 45 patients examined on April 24, 1936, were carriers of the hemolytic streptococcus, and in 2 of these, throat cultures yielded only 1 or 2 colonies per plate.

These observations indicate that the incidence of the hemolytic streptococcus on the telephone rises and falls with the incidence of the streptococcus in the oro-pharynx of persons in the community and the incidence of streptococcus disease.

Four strains of streptococcus were tested for virulence in white mice, by the inoculation of a 12 hour broth culture in amounts from 0.5 to 0.000001 c.c. None of the mice succumbed. The lack of virulence may have been due to the fact that all were in the SR phase, as manifested by their colonial forms. Other strains exhibited on first isolation mucoid, matt, smooth, or partially rough phases. No attempt was made to carry out virulence determinations on these strains.

A number of experiments were carried out with known carriers of pathogenic bacteria to find out if the pathogen could be recovered from telephone instruments used by them. A research worker suffering from an acute infection of a nasal sinus due to pneumococcus Type I, left this microörganism on the instrument. Another worker, speaking when ill with a streptococcus angina, left hemolytic streptococci on the mouthpiece. During her convalescence in the hospital, the streptococcus colonies diminished in number both in the cultures from the throat and from the telephone mouthpiece. They were absent from cultures taken shortly before discharge.

The hemolytic streptococcus was recovered also from mouthpieces used by patients while recovering from acute rheumatic fever, and from tonsillitis due presumably to the hemolytic streptococcus. In two experiments from 3 to 23 streptococcus colonies were recovered from telephone mouthpieces after 3 minute conversations.

A more extensive investigation was made in the case of a family of 5, all of whom were suffering from upper respiratory infections. Two members were found to be carrying pneumococcus Type II, while 2 others had hemolytic streptococcus Group A Type 28 (Griffith[6]). Both of these microorganisms were recovered from the home telephone. The streptococcus was recovered also from the office telephone used by 1 of the 2 who were carrying the microörganism.

Preliminary steps have been taken to carry out a serological classification of the streptococci recovered from telephone instruments in cases in which nothing was known as to the source of the microörganism. The studies of Lancefield,[9] Griffith, and Hare[10] have

provided the basis for this classification. Our work has been carried only far enough to show that members of Group A, which includes the great majority of strains pathogenic for man, and of Group C, may occur on public telephone instruments.

In order to determine whether bacteria can be dislodged from the mouthpiece during a conversation, an attempt was made to blow off bacteria from mouthpieces after ordinary usage, and from others which had been sterilized and then sprayed with broth culture of streptococcus. One end of a glass tube was blown out into the shape of human lips; to the other end a rubber bulb was attached. This was compressed to emit puffs of air approximately equal in force to those made in speaking. The artificial lips were placed in front of a mouthpiece and a Petri dish containing blood agar was held immediately behind the device. The bulb was compressed repeatedly during 1 to 3 minutes. After incubation the colonies on the plates were counted.

Three mouthpieces were taken from instruments near the laboratory; from the first 7 bacteria were dislodged, from the second, 3, and from the third, 2. The mouthpieces were then cultured to determine the approximate number remaining. In the order given, 124, 62, and 56 colonies were obtained, which indicates that only a very small percentage of the bacteria present were dislodged.

In a second experiment a hemolytic streptococcus culture was sprayed on the transmitters. Some of them were placed in dustproof containers and allowed to dry overnight at room temperature, others were tested while moist. From the mouthpieces on which the culture had been allowed to dry, from 1 to 8 colonies of bacteria commonly recognized as saprophytic were found on the culture plates, but no colonies of streptococci. This negative result indicates that streptococci are not easily dislodged after being dried on such a surface.

Three mouthpieces were tested immediately after spraying. The cultures from 2 were sterile, in 1, 2 colonies of the original streptococcus appeared. Further study and the elaboration of a technic for depositing known numbers of bacteria is required for evaluation of such experiments. The limited number of experiments indicates merely that bacteria may be dislodged in small numbers from telephone transmitters. Muller [7] has made similar observations.

Little information is available as to the viability of pathogenic bacteria on the telephone transmitter. In one experiment sterile mouthpieces were contaminated with a broth culture of a hemolytic streptococcus from scarlet fever, which was in the mucoid stage and virulent for mice in amounts of 0.00000001 c.c. Cultures were made daily from the mouthpiece, and streptococci were recovered on 4 successive days. The microörganism appeared in the SM phase showing that it had dissociated. It had begun to lose its virulence for mice, as the smallest lethal dose was 0.001 c.c. In another experiment the streptococcus remained viable for 11 days, by which time the numbers of organisms had diminished greatly, only 2 colonies being obtained from 11 mouthpieces. The relative humidity varied between 47 per cent and 62 per cent, and the outdoor temperature from 33° to 25° C. The streptococcus remained in the mucoid stage.

DISCUSSION AND SUMMARY

This investigation was undertaken to secure information regarding the occurrence of bacteria on the telephone instrument under the conditions of ordinary use, as the basis for an estimate of any sanitary hazard which might be involved in its use.

A bacteriological survey was made of telephone instruments in a wide variety of situations in and about New York City. Cultures were made from mouthpieces and in a small number of cases, from the earpieces. The cultural methods were especially adapted to the recovery of pathogenic forms, but permitted the growth of other types. Many varieties of bacteria were recovered. The great majority were saprophytes, belonging to types found in the air, and which are present in the oro-pharynx of human beings. The bacteria on telephone instruments are presumably derived from these sources.

Our observations indicate that bacteria are not more numerous on telephones in one location than in another. We were not able to discover any relation between the frequency of use of a telephone and the number of bacteria present. Since the number of bacteria which may be recovered from a telephone in constant use is often no greater than the number which may be deposited in a single conversation it is evident that there is no tendency toward the accumulation of living bacteria on the transmitter. Our observations are in agreement with those of Vasica, *et al.*, that the total numbers of bacteria are not greater on transmitters visibly covered with dust than on those which appear clean.

A question of fundamental importance in seeking for a possible sanitary hazard in the use of the telephone is whether the bacteria found are pathogenic for man. The respiratory pathogens, of which the pneumococcus and hemolytic streptococcus may be regarded as the most important, because of the frequency and the variety of the diseases which they cause, demand first consideration.

Our results in the recovery of these forms are in agreement in general with those of the less extensive surveys made by Saelhof [1] and by the National Pathologic Laboratory of New York City.[8] The pneumococcus was found only in cultures made during winter and spring, when disease due to this microörganism is most prevalent. The hemolytic streptococcus was recovered with greater frequency than the pneumococcus. The same seasonal occurrence was noted for the hemolytic streptococcus as for the pneumococcus; hemolytic streptococcus was recovered most frequently during the winter and spring and showed its highest incidence at times when streptococcus disease was most prevalent in the community.

Although these observations were made in a large number of instances and cannot be regarded as fortuitous, the interpretation of their sanitary significance is not a simple matter. Many cocci which must be placed in the pneumococcus and streptococcus groups have low pathogenicity, or none that can be demonstrated, either for man or for laboratory animals. They are frequently designated as mouth-strains in contrast to the disease producing strains which are recovered from infections. An advance in our understanding of this problem in the case of hemolytic streptococcus has come through the work of Lancefield,[9] Griffith,[6] and Hare,[10] who have been able by serological reactions to distinguish groups of the streptococcus of which only certain ones have high pathogenic significance for man. Members of Group A are responsible for the majority of the cases of human streptococcus infection. This group includes 28 or more types (Griffith), certain of which are associated with particular disease complexes such as scarlatina, erysipelas, etc.

Members of the other groups rarely cause disease. It is necessary to know the serological group to which a streptococcus belongs before its sanitary significance can be estimated. This need was recognized early and the

preparation of group- and type-specific sera was undertaken. Among the streptococcus strains recovered from telephone instruments, have been found representatives of Groups A and C. It is our hope to be able to complete our bacteriological survey by making serological identifications of all the recovered strains of hemolytic streptococci.

Even when such information is available, both for the streptococcus and for other pathogenic organisms, a second and much more difficult problem must be solved before the pathogenic organisms which may be found on a telephone instrument can be considered as transmitters of disease.

Only in recent years have data been obtained on the occurrence of respiratory pathogens outside the human body. Stillman [11] of the Rockefeller Institute has found pneumococci in the dust of rooms occupied by pneumonia patients, and White [12] has obtained streptococci in cultures from sweepings of rooms and wards occupied by persons suffering from hemolytic streptococcus infections. We do not have any means for estimating the extent to which disease is caused by bacteria from such locations. While it is possible that on occasion hemolytic streptococci clinging to dust particles in the corners of a room, or on the mouthpiece of a telephone, are dislodged by currents of air and carried into the respiratory passages of a human being, infection may not be caused by this but may result only when the microörganisms are implanted upon the mucous membranes of the nose and throat by direct transmission from person to person. Moreover, the resistance of the individuals in any population group to the streptococcus must vary with the type of microörganism and its previous occurrence within the group. It must seem in consequence necessary not only to identify by serologic means the streptococci which may be found on a telephone, but also to determine the distribution of the streptococcus types among a population. It is, we believe, only through large-scale surveys, such as that being undertaken by Gordon [13] in Roumania, that we can learn the facts necessary for an understanding of the sanitary significance of the streptococcus in a population group.

In the absence of specific bacteriological information, the public health problem of the telephone can be approached only on general grounds. Respiratory infection has been traced in rare instances from one person to another, but the exact means of transport of the infectious agent has not been demonstrated. If droplet nuclei, which Wells [14] has found to remain suspended for a considerable time in the air, should prove to be the most important factor in the spread of infection, it would be necessary to regard the air within a telephone booth, for example, as a greater source of danger than the instrument itself, and we should have to believe that the telephone and its appurtenances have but a small share in the spread of disease.

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Is Routine Examination and Certification of Food Handlers Worth While?*

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ALTHOUGH the control of food handlers with communicable diseases was first attempted by the Board of Health of New York City as early as 1916, compulsory annual medical examination was not required until March, 1923.

The first amendment to the Sanitary Code provided that food handlers with communicable diseases shall not be employed and further that any food handler may be examined at any time at the discretion of the Department of Health. After an experience of 18 years with medical examinations of food handlers in New York City, during the last 11 of which annual examination and certification of all food handlers was compulsory, by amendment to the Sanitary Code in September, 1934, such examination and certification was discontinued. This action of the Board of Health was based on the following considerations:

1. The examination of food handlers by private physicians cannot be accepted as reliable.
2. The cost of physical examinations of food handlers made exclusively by the Department of Health is not commensurate with the public health benefits obtained.
3. The most careful physical examination does not reveal the most important conditions that may be transmitted by food handling.
4. In order to be able to certify that a food handler is free from communicable disease, at least a chest X-ray, a Wassermann, and a stool examination for typhoid, paratyphoid and amebic and bacillary dysentery carrier must be made. The cost of such an examination is almost prohibitive.
5. Even if such a complete examination were made, there is no assurance that the food handler would remain free of communicable disease during the tenure of the certificate.
6. Too much emphasis has been placed on the value of medical examinations as a means of preventing the spread of disease through food handling, especially as it relates to such communicable conditions as venereal diseases, tuberculosis and skin conditions.

Consideration 1—Private physicians' examinations—In New York City, in each of the 5 boroughs, we conducted a clinic where food handlers were examined and certificates issued without fee. Those who did not wish the inconvenience and the loss of time by coming to the clinic were permitted to employ a physician who made the physical examination, filled out the required form and forwarded it to the Department of Health. If the physical examination disclosed no communicable condition, the food handler certificate (a department form) was issued to the applicant. If a suspicious communicable condition was disclosed, the food handler was further examined at the food handlers' clinic and final disposition made. The question arises, should a department of health certify to the freedom from communicable dis-

* To be read before the Health Officers Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 8, 1937.

ease in a food handler as a result of an examination by a private physician over whom it has no jurisdiction or control? You may draw your own conclusions from the following tabulation of examinations for the last year during which such examinations were made in accordance with the above procedure.

TABLE I

	Private Physicians	*Dept. of Health Clinics*
Examined	219,282	108,176
Held for Observation		
Tuberculosis	37	623
Venereal disease	89	1,692
Typhoid carrier	293	1,438
Skin diseases	20	73
Total	439	3,826
Rate	200 per 100,000	3,540 per 100,000
Excluded		
Tuberculosis	2	39
Venereal disease	4	146
Typhoid carrier	0	2
Skin disease	0	52
Total	6	239
Rate	3 per 100,000	221 per 100,000

The department clinics held for observation over 17 times as many food handlers as did private physicians, and excluded over 70 times as many.

How could it be otherwise when it was a well known practice for physicians to solicit the examinations from store to store, either themselves or by a representative, and make examinations in the rear of the store or across the counter.

Consideration 2—Cost of examination in comparison to benefits—The cost to the Department of Health of maintaining clinics, when we were examining only one-third of the total food handlers was approximately $43,000 annually. The cost of examining all food handlers, approximately one-third of a million, can be conservatively placed at $100,000. It might be held that a fee should be charged to defray the expense of such a program. Whether the taxpayer or the food handler himself foots the bill is not germane to the present discussion. The question remains—what return in public health protection would accrue from the expenditure of such a sum of money? Referring again to our tabulation, the only individuals discovered who might be considered a health menace through food handling are the two typhoid carriers. If the Department of Health had conducted all the examinations during this period at the conservative estimate of $100,000, the cost per typhoid carrier would have been $50,000. Since two-thirds of these examinations were made by private physicians, the usual fee being $1 per examination, the cost may be calculated at approximately $260,000, or $130,000 per carrier. I submit, is such a cost commensurate with the public health benefits obtained? The value of public health work is measured by the degree to which sickness and death in a community are reduced, and the desirability of adopting any particular program must be gauged by the comparative yield for the outlay in effort and money.

Considerations 3 and 4—Communicable diseases revealed depend on the method of examination—Cases of tuberculosis can be missed, even by a careful examiner without an X-ray. Cases of syphilis without lesions can be found only by means of a Wassermann test. Carriers of enteric conditions can be determined only by routine laboratory stool examination. Therefore, in order to certify a food handler as free from communicable disease, there should be, in addition to the physical examination of each food handler, a routine chest X-ray, a Wassermann, and at least one stool

examination for typhoid, paratyphoid, amebic and bacillary dysentery. Assuming that there is some measure of public health protection if such an examination is made, the cost to the Department of Health can conservatively be estimated at a minimum of $4 per examination. If the examination is made by a private physician and private laboratory, the cost would probably be nearer $15 to the food handler, a prohibitive cost. This might be cut down on reëxamination by dispensing with the stool examination. At $4 per examination, the cost would be approximately 1⅓ million dollars annually, or about one-fourth of our present budget. Can you visualize 1,000 roentgenograms, Wassermanns, and typhoid stool examinations daily in addition to our routine work in these fields? Should the "governing body" of your community suddenly become very generous and grant you an additional amount of money equivalent to one-fourth of your present budget, what health service would you want to render your community with such funds? Would you expend this sum on food handler examinations?

Consideration 5—Healthy food handlers may become infected soon after certification—Assuming that all communicable conditions that may be a public health menace through food handling are found as the result of proper examination, and that in spite of the great cost this *is* desirable, what assurance can we have that food handlers will be free from communicable disease for the ensuing year, or whatever the tenure of the certification may be? And yet it has been the practice to give a food handler a certificate good for a period of time to the effect that he is free from communicable disease over this entire period. Is this not giving the public a false sense of security? Is this not pure camouflage?

Consideration 6—Many communicable diseases are not spread by food—With the exception of the enteric conditions, the possibility of transmitting disease by food handling is rather remote. Communicable skin conditions, tuberculosis, syphilis and gonorrhea are just not contracted that way. In the case of enteric diseases, there are other effective methods which, if employed, will give reasonable protection to the public against carriers of these diseases.

It may be observed that this discussion applies in the main to a large city such as New York. It is our contention, however, that the fundamental principles involved apply more or less to any community large or small. There is only a difference in degree.

What then can be done to protect the public against infection from food handlers?

1. Prompt reporting of communicable diseases, giving the occupation of the individual. If a food handler is suffering from a condition in communicable form, he can be immediately excluded from work and kept under supervision until it is safe for him to return. By this procedure, too, food handler contacts with certain communicable diseases may also be excluded from work.

2. By thorough epidemiological investigation and follow-up of cases of typhoid fever, infected food handlers should be discovered. As of July 1, 1937, we had listed in New York City 727 typhoid carriers. Of this number, 397 were discovered as the result of epidemiological investigation; 270 were listed as the result of persistence of positive stools after recovery from typhoid; 35 as the result of food handler examinations; 23 as the result of operative procedures. It can be seen from this that the most important factor in detecting typhoid carriers is the epidemiological investigation. Of the 35 carriers found as the result of food

handlers' examinations, 23 were found during the 11 year period of compulsory annual examinations. Of the 397 carriers discovered as the result of epidemiological investigation, 28 were food handlers. Of these 28, 18 were discovered during the same 11 year period of compulsory annual examination. Apparently, then, 18 food handler carriers discovered by epidemiological investigation had been missed by the routine examination of food handlers.

In spite of the fact that food handler examinations were discontinued in New York City in September, 1934, there has been a constant diminution in typhoid fever as shown by the following table:

	1933	*1934*	*1935*	*1936*
Cases	557	332	314	305

It would seem that food handler typhoid carriers in New York City have not been an important health menace during this period.

3. Exclusion and strict supervision of food handler typhoid carriers and food handler members of their families.

4. Education of food handlers—

a. Instruction in personal hygiene —Clean hands are perhaps the most important yet simplest expedient to prevent food contamination. To this end, adequate washing facilities conveniently located with soap, running hot water, and clean towels must be provided in all food establishments.

b. Instruction in handling food, namely the use of tongs, and forks, thereby minimizing the handling of foods with bare hands.

c. Placards of instruction to food handlers posted in wash rooms, and pamphlets of instruction distributed by food inspectors in the course of their routine duties.

5. Lastly, to impress upon employer and employee alike that they are jointly responsible for violating the law if a food handler with a communicable disease is found employed.

These, then, are the things we can do and should do.

ANNUAL ROLL CALL
NOVEMBER 11–25, 1937

Scoops as a Source of Contamination of Ice Cream in Retail Stores

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A COMPARATIVE study of the results of routine ice cream analyses conducted at Plainfield, N. J., over several years showed that the bacterial counts of loose ice cream were in most instances considerably higher than those of the same product manufactured and packaged at the same plant and dispensed by the same dealer. As a result we endeavored to ascertain the reason for the increased number of bacteria in bulk ice cream.

Our former procedure for sampling ice cream was carried out as follows:

Two samples of the same bulk ice cream were obtained and placed in sterile screw cap jars. The first was taken with the vendor's scoop in the manner that it would be served to the customer in an ice cream cone or dish. The second was taken with a sterile tablespoon from the freshly exposed sub-surface after at least 1 inch of the surface layer had been removed by scraping with one sweep of another sterile tablespoon.

The samples were transported to the laboratory in a refrigerated case and liquefied with as little heat as possible. One c.c. of a 1:1,000 dilution was planted on standard nutrient agar and the plates incubated at 37° C. for 48 hours. Although this method of plating does not conform with Standard Methods, it was found to be practical for the purpose of comparison.

Bacterial counts were invariably higher in scoop samples, in many instances from 50 to 300 per cent.

TABLE I

Counts on Samples Taken with Vendor's Scoop	*Counts on Samples Taken with Sterile Spoon*
640,000	8,000
320,000	23,000
512,000	3,000
158,000	28,000
121,000	3,000
113,000	10,000
19,000	2,000
175,000	11,000

From these findings it was apparent that there was considerable surface contamination of ice creams which were being dispensed in retail stores from bulk containers, but we could not conclusively demonstrate the factor of contamination although the vendor's scoop was suspected. To ascertain whether the scoop or dispensing spoon was the source of contamination we took ice cream samples as follows:

The inspectors were equipped with kits containing a large jar of sterile tablespoons, a number of sterile 8 oz. mayonnaise jars with screw-caps, several sterile 20 c.c. screw-cap vials, sterile 10 c.c. pipettes, and a metal

insulated box in which samples could be kept under refrigeration. Four samples were taken from the container of bulk ice cream as follows:

The first from the surface with the vendor's scoop and placing the ice cream in a sterile jar labeled "Surface Vendor's Scoop"; the second from the surface with a sterile tablespoon and placing the ice cream in the sterile jar labeled "Surface Sterile Spoon"; the third with the vendor's scoop from the freshly exposed sub-surface after the surface had been removed by scraping with one sweep of a sterile spoon a layer of at least 1 inch in depth, labeled "Sub-Surface Scoop"; the fourth was also taken from the freshly exposed sub-surface area with a sterile spoon, care being exercised to avoid touching that portion of the ice cream from which the scoop sample had been removed, labeled "Sub-Surface Sterile Spoon."

A sample was also taken of the water in which the scoops or dippers were kept. Ten c.c. of this water were taken with a sterile pipette and placed in a sterile screw-cap vial.

The samples were carried in the refrigerated case containing ice or dry ice until the return to the laboratory. Upon arrival at the laboratory the ice creams and scoop water were plated. A few examples of the comparative counts will be noted in Table II.

In every instance the samples of ice cream taken with the vendor's scoop, regardless of whether it was from the surface or sub-surface, was higher than those taken with the sterile tablespoon, and in the majority of cases where the scoop water counts were high the samples taken by the scoop were also excessive, but the surface and sub-surface sterile spoon samples were low. Where the count of the scoop water was low the bacteria content of ice creams were found comparatively low and more consistent.

The above counts, typical of our findings, were based on the analysis of more than 200 samples, and we believe these results are conclusive evidence that the dipper or scoop is the major contributory factor in contamination of loose ice cream.

There are factors which influence the contamination of ice cream by utensils, making it necessary for the inspector to keep accurate reports of conditions found at the establishment during the time of sampling. For instance, the amount of ice cream in the can has a direct effect on the count, since the freshly opened can would not have been subjected to the high degree of scoop contamination as a nearly empty can. Also it was found that the time of day samples were taken influenced the count, due to the fact that dippers and containers were usually

TABLE II

Surface		*Sub-Surface*		
Vendor's Scoop	*Sterile Spoon*	*Vendor's Scoop*	*Sterile Spoon*	*Scoop Water*
135,000	34,000	143,000	2,000	6,336,000
61,000	10,000	38,000	4,000	3,760,000
21,000	3,000	11,000	1,000	215,000
50,000	20,000	12,000	5,000	192,000
256,000	39,000	320,000	12,000	384,000
198,000	35,000	43,000	27,000	576,000
640,000	69,000	91,000	9,000	448,000
5,000	1,000	3,000	1,000	6,000
30,000	11,000	24,000	20,000	4,000
110,000	31,000	254,000	21,000	1,344,000

washed in the morning just after the establishment was opened. Another factor was the physical condition of the scoops. Some were found to be broken and mended with pieces of cloth or string; some contained cheesy or slimy deposits, particularly around the gears and working parts, which clearly showed that they had not been disassembled for proper cleaning.

The data obtained from the inspectors' records showed that ice cream dippers, scoops, and other apparatus used in retail stores are generally kept in various types of vessels containing cold water. In some instances, particularly at soda fountains, the container has a constant stream of fresh water flowing in from the top. This type is no more satisfactory than the common vessel because the small stream of fresh water entering at the top is not sufficient in volume or in force to change more than the surface of the water, and leaves the heavier ice cream deposits in the bottom of the container. The scoops and containers are in most instances cleaned by scrubbing in hot soapy water once daily, usually in the morning, and in a short time, depending on the number of times the dippers are used, the water becomes fairly well loaded with ice cream, which soon reaches room temperature and becomes an ideal medium for the growth of bacteria.

Arrangements were made with several ice cream dispensing establishments to discontinue the use of the scoop containers, place their scoops and other dispensing utensils on dry racks, and rinse in either hot or cold running water before and after each use. Three or 4 days after the institution of this system, samples were obtained, the counts of which, as shown in Table III are considerably lower and more consistent than those taken with the wet scoops. It will also be noted that the samples taken with the sterile spoon from both the surface and sub-surface and samples taken with the scoop from the sub-surface are considerably lower. We attribute this to the fact that when the scoops are kept wet there is at each use a transfer of water of high bacterial count which penetrates the ice cream and carries the contamination to a depth of 2 or 3 inches.

TABLE III

Surface		*Sub-Surface*	
Vendor's Scoop	*Sterile Spoon*	*Vendor's Scoop*	*Sterile Spoon*
2,400	700	1,200	800
10,000	6,000	15,000	9,000
20,000	4,000	9,000	9,000
7,000	4,500	6,600	3,000
20,000	15,000	12,000	10,000
75,000	50,000	62,000	63,000
3,600	3,200	3,200	4,300
7,000	4,600	4,200	5,700
5,200	5,400	2,900	4,600
3,800	3,600	3,200	2,700
17,500	10,800	10,400	8,400
7,100	3,600	5,800	4,900

It seems reasonable to conclude that if the ice cream scoops and other dispensing utensils are kept on a dry rack protected from flies, dust, and other sources of contamination, instead of in water, and rinsed with either hot or cold tap water after and before each use, the amount of contamination from the dispensing utensils can be greatly reduced.

Effects of Inhalation of Smoke from Common Fuels

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FOR years the disease importance of smoke has been the center of long and repeated controversies. Yet the observations and conclusions drawn from these discussions have been more or less general, derived from inferential or purely speculative evidence. Thus, no reference is found in the literature regarding the direct effects of smoke arising from the burning of three commonly used fuels: anthracite, coke, and bituminous coal.

OUTLINE OF PROBLEM

The program in its entirety had as a primary object the determination of the maximum physiological and pathological effects of the mixtures supplied to experimental animals under specified conditions. Securing conclusive evidence in so broad a field requires time. Therefore the use of higher than normal concentrations of flue gases, and of combustion products mixed in definite proportions with air, supplied directly from furnace to gas-tight chambers containing animals, was deemed advisable. The solids and gases were thus in the same proportions, although not in the same concentrations, as those to which human beings are exposed.

In order to have interpretable effects, the animals were subjected to almost continuous exposure, the concentration of flue gases in the mixtures was uniformly maintained, and periodic analyses of conditions in the chambers and effects of the artificial atmosphere on the experimental animals were made.

EXPERIMENTAL SET-UP AND TECHNIC

Four gas-tight exposure chambers, capacity 60 cu. ft. each, were borrowed from the U. S. Bureau of Mines. In each of these were placed 4 rabbits and 8 rats. Seventeen days before the experiment ended 4 mice were added to each chamber. One of the chambers was used as a control, and each of the others was connected indirectly to a small egg stove. In other words, the three stoves burned respectively anthracite (nut), coke (domestic), and bituminous coal (about 35 per cent slack).

The amount of fuel burned per hour was the same in each of the stoves (1,000 grams). Fuel was charged at the beginning of each hour; at the half-hour the fire was stirred, and at the end of the hour the ash was shaken out. Fires were maintained in good condition, with the object of simulating fairly good household practice.

The animals breathed a mixture of air from a compressor line and gases from the appropriate stack, the stack gases

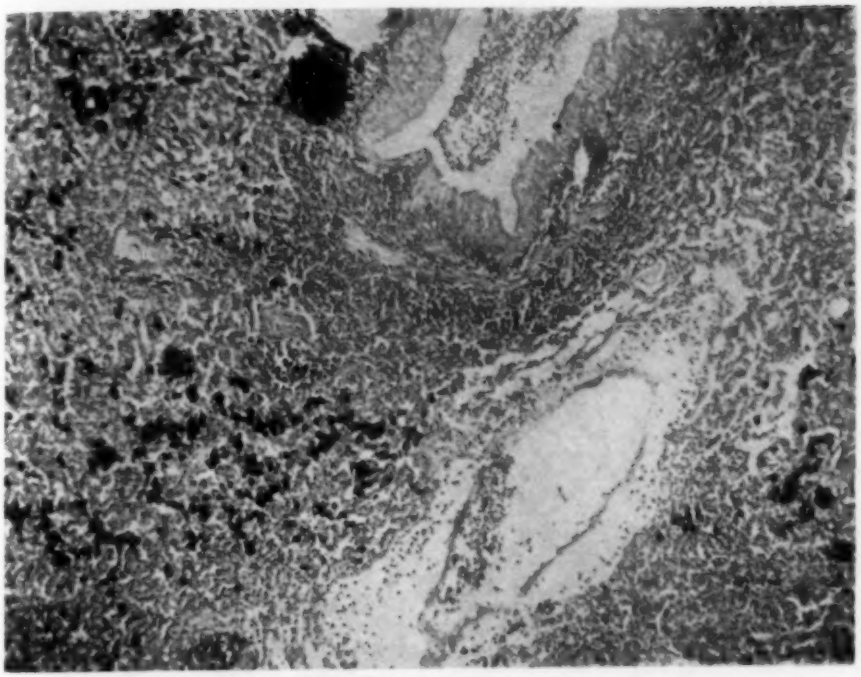

PLATE I—S–35–840. Lungs of rat 21 at the end of 80 days' exposure to bituminous coal. Acute purulent bronchitis; goblet cell degeneration; much pigment both extra and intracellularly. 150 X.

in such proportions that the concentration of sulphur dioxide and carbon dioxide would be below any percentage reported as toxic, carbon monoxide not more than a trace, and oxygen about 19 per cent. The air-gas mixture in each chamber was changed completely every 15 minutes. By means of injectors, the required amounts of gases were drawn from the stacks, mixed with air from a compressor line, and introduced into the chambers. The animals were exposed 23 hours a day for 80 days, and released from their cages for 1 hour each day. They were fed a standard balanced diet.

Fuels used and gases generated in each chamber were analyzed; dust counts, temperatures, and relative humidities were recorded; the animals were weighed and examined at frequent intervals; blood-counts were made, and the animals that died were autopsied. Immediately following the termination of exposure most of the remaining animals were killed and autopsied, a few being held for a longer period of time and chloroformed at various intervals, so that the development of possible further effects might be observed.

The following three tabulations summarize briefly the results of fuel and gas analyses and dust counts.*

TABLE I

Analysis of Fuel Used

Fuel	*Vol. Matter* *Per cent*	*Fixed Carbon* *Per cent*	*Ash* *Per cent*	*Sulphur* *Per cent*
Anthracite	3.45	91.10	5.45	0.58
Coke	2.61	85.93	11.46	0.92
Bit. coal	36.15	59.34	4.51	1.36
Bit. 3/8 Screen	33.19	58.61	8.20	1.53

* The chemical analyses and dust counts were made by M. A. Yavorsky.

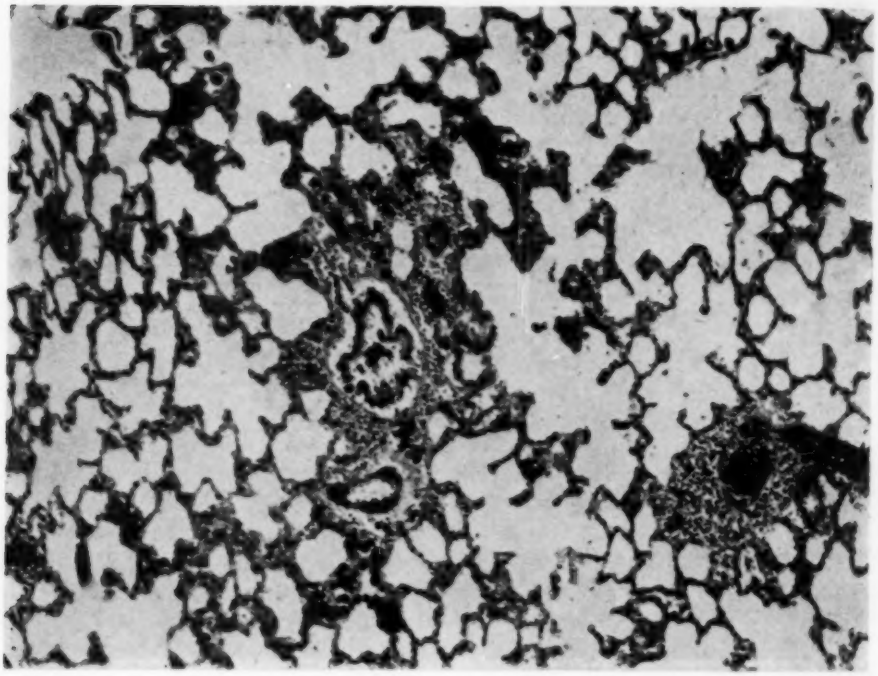

PLATE II—S–36–115. Lungs of rat 20, 103 days after exposure to bituminous coal had ceased. Carbon mostly intracellular and clustered within peri-vascular lymph spaces. Cells compressed and spingle-shaped. 150 X.

TABLE II

Analyses of Gas-Air Mixtures in Chambers *

		O_2 Per cent	CO †	CO_2 Per cent	H_2S ‡	SO_2** P.p.m.
Anthracite	Average	20.6	1	0.4	2	1.91[3]
	Maximum	21.0	Do	0.7	No	3.68
	Minimum	19.5	ubtful	0.1	ne	0.48
Coke	Average	20.1	t	0.5	Detect	9.12
	Maximum	21.7	Trace	0.7	able	14.57
	Minimum	19.4		0.3		5.84
Bit. coal	Average	20.0		0.6		7.51
	Maximum	20.8		10.0		13.63
	Minimum	19.2		0.2		3.33

* As determined by the folliwing methods:
† Yant, W. P., and Sayers, R. R. *Pub. Health Rep.*, 37, 27–52:2434, 1922.
‡ Littlefield, J. B., Yant, W. P., Berger, L. B., U. S. Bureau of Mines, *Rep. Invest.* 3276, June, 1935.
** Smith, R. B. *J. Indust. Hyg.*, Dec., 1931.

TABLE III

Dust Counts

(Particles per c.c.)

Chamber	*Average*	*Maximum*	*Minimum*
Control	125	221	38
Anthracite	312	806	48
Coke	370	911	108
Bit. coal	4,410	5,640	3,502

These counts represent averages of a number of samples taken during each quarter hour after firing, at intervals during the test period. Samples were taken with an Owens jet counter, the particle counts being made under a microscope at a magnification of 970 diameters.

EFFECTS ON WEIGHT OF ANIMALS

Table IV is self-explanatory. If the gain in weight of the control animals is considered as being 100 per cent, the rats in the anthracite and coke chambers gained 105 per cent and 114 per cent respectively, while those in the bituminous cage showed a gain of only 75 per cent. Among the rabbits, the animals subjected to anthracite gained 84 per cent; those exposed to coke gained 77 per cent; while the animals breathing a bituminous coal gas-air mixture showed a total gain of only 9 per cent. It is noteworthy that although one of the rabbits in this cage was in the growing stage of life, it actually weighed less at the end of the test period than at the beginning.

EFFECTS ON THE BLOOD

Due to lack of time, only the rabbits were used for blood studies. Three control blood counts and smears done on each of the 16 rabbits on 3 successive days immediately before exposure began, were found to be normal (Table V).

Following exposure, two complete counts on all animals were done at weekly intervals. Of the 4 groups, only the animals in the bituminous chamber showed an immediate response in the blood picture. Three of the 4 rabbits in this chamber showed a leucocytosis above 10,000 WBC per cu. mm. of blood when the first post-exposure count was done. Weekly or bi-weekly blood counts were therefore continued in this group until the cessation of exposure. Since none of the other animals showed any appreciable blood changes, counts on them were done only about every other week or less frequently.

HEMOGLOBIN AND ERYTHROCYTES

A gradual and consistent rise in the percentage of hemoglobin and number of erythrocytes per cu. mm. of blood was noted in all animals, including the controls; this was considered physio-

TABLE IV

Weight Gains of Experimental Animals

Av. Gains Bet. Dates Indicated	*Control*			*Anthracite*			*Coke*			*Bit. Coal*		
	M&F	*Male*	*Female*	*M&F*	*Male*	*Female*	*M&F*	*Male*	*Female*	*M&F*	*Male*	*Female*
Rats												
Gains in grams 8-2-35 to 11-11-35	90.7	108.6	77.5	95.4	123.6	67.3	103.7	111.7	93.1	68.0	78.4	60.2
Gains in per cent comp. to control rats	100	100	100	105.2	113.8	86.8	114.3	102.9	120.1	75.0	72.2	77.7
Rabbits												
Gains in grams 8-4-35 to 11-13-35	1,380	1,664	1,287	1,160	976	1,344	1,074	1,074	....	129	403	−145
Gains in per cent comp. to control rabbits	100	100	100	84.1	58.6	104.4	77.8	84.2	....	9.3	24.2	....

Only those animals were considered that had lived through the entire period of exposure.

TABLE V

Group Average Blood Counts (preëxposure controls)

	Percentage Hemoglobin (Sahli)	*Red Blood Cells*	*White Blood Cells*	*Polymorphonuclears (100 cells counted)*	*Lymphocytes*	*Other Cells*
Control	65	5,417,000	5,750	21	71	8
Anthracite	65	5,210,000	5,697	18	74	8
Coke	62	5,245,000	6,066	19	70	11
Bituminous	63	5,566,000	6,025	21	70	9
Average for all cages	63.7	5,359,000	5,886	19	71	10

logical and attributed to increasing maturity. But in each set of animals a further increase in hemoglobin content was noted. Thus, the average per cent of hemoglobin for all the animals in the anthracite cage was slightly higher than that of the controls; that of the coke group higher than the anthracite group; and that of the bituminous animals still higher than any of the preceding groups. The red cell count in all but the bituminous group of animals was practically the same. It was in the animals exposed to bituminous coal that the greatest variations occurred, both the hemoglobin and red blood cells ascending rapidly in steep, roughly parallel curves.

In Table VI the average of all 4 animals in the bituminous chamber is shown (80 per cent hemoglobin and 6,580,000 RBC) but since 2 died soon after exposure, the average hemoglobin and red blood cells of the 2 remaining rabbits would seem more accurate (86 per cent hemoglobin and 6,790,000 RBC). Particularly striking are the counts in rabbit No. 11, one of the two survivors:

COUNTS OF RABBIT No. 11

	Date	*Hemoglobin*	*Red Blood Cells*
Preëxposure average	7-18-35	64.3	5,523,000
Post-exposure	8- 6-35	76	6,790,000
	8-19	86	7,020,000
	8-28	92	7,340,000
	9- 4	98	7,460,000
	9- 9	95	7,430,000
	9-11	100	7,530,000
	9-17	108*	7,140,000
	9-30	99	7,720,000

* Error? All observations but this one were made by the same person.

At the end of the experiment this rabbit showed a 54.7 per cent increase in hemoglobin and a 39.7 per cent increase in red blood cells per cu. mm. of blood.

TABLE VI

Group Average Blood Counts During Exposure

	Percentage Hemoglobin (Sahli)	*Red Blood Cells*	*White Blood Cells*	*Polymorphonuclears (100 cells counted)*	*Lymphocytes*	*Other Cells*
Control	71	5,645,000	10,004	24	68	8
Anthracite	75	5,717,000	9,479	28	63	9
Coke	77	5,657,000	9,913	35	60	5
Bituminous	80	6,580,000	11,285	48	47	5
Average for all cages	77	5,952,000	10,261	34	58	8

PLATE III—Gross appearance of lungs of rabbit in bituminous cage 429 days after exposure ended.

WHITE BLOOD CELLS (TABLE VII)

All animals, including the controls, had a leucocytosis at some period or other during the course of the experiment. There was considerable individual variations in the white cell counts, but when averages were computed for each group of animals, those in the anthracite chamber had only a very slight increase in the number of white corpuscles, while the bituminous group had a definite, moderate leucocytosis. The coke group showed an increase both in total white cell count and polymorphonuclear count intermediate between the anthracite and bituminous animals.

PATHOLOGICAL EFFECTS

Eighty animals were autopsied; 9 died during exposure; 3 more died at varying intervals after exposure; 57 were killed immediately after the experiment; and 4 were killed 103 days later. The remaining 8 were held for longer observation and killed after 429 to 443 days.

PATHOLOGIC LESIONS IN ANIMALS WHICH DIED

The 2 mice in the control chamber died of bronchopneumonia. In 1 there were widespread complicating miliary

TABLE VII

Individual White Cell Counts During Exposure

	Control				*Anthracite*			
Rabbit No. →	*1* †	*2*	*3* ‡	*4*	*5*	*6*	*7*	*8*
1st count	6,300	7,650	7,850	7,700	7,500	6,200	7,950	6,250
Last count	10,150	7,700	12,500	12,650	9,200	10,500	13,000	9,000
Highest count	13,750	12,900	12,800	12,650	10,150	11,700	13,000	9,400
Average count	9,975	9,140	10,462	9,640	9,640	9,490	10,310	8,400
Group Average		10,004				9,479		

	Bituminous				*Coke*			
Rabbit No. →	*9* *	*10*	*11*	*12* *	*13* †	*14*	*15*	*16*
1st count	9,950	10,900	10,300	10,650	8,000	7,600	7,300	7,650
Last count	12,100	15,500	11,200	.....	11,500	13,150	9,600	10,850
Highest count	12,100	16,650	13,350	.....	14,200	13,150	10,800	11,600
Average count	10,275	12,830	11,380	.....	10,330	9,710	9,500	9,913
Group Average		11,285				9,913		
Average for surviving 2		12,107						

* Died during exposure (pneumonia).
† Died after exposure (intestinal parasites) 3% eosinophilia.
‡ Died after exposure (fibrinous pleuritis and bronchopneumonia).

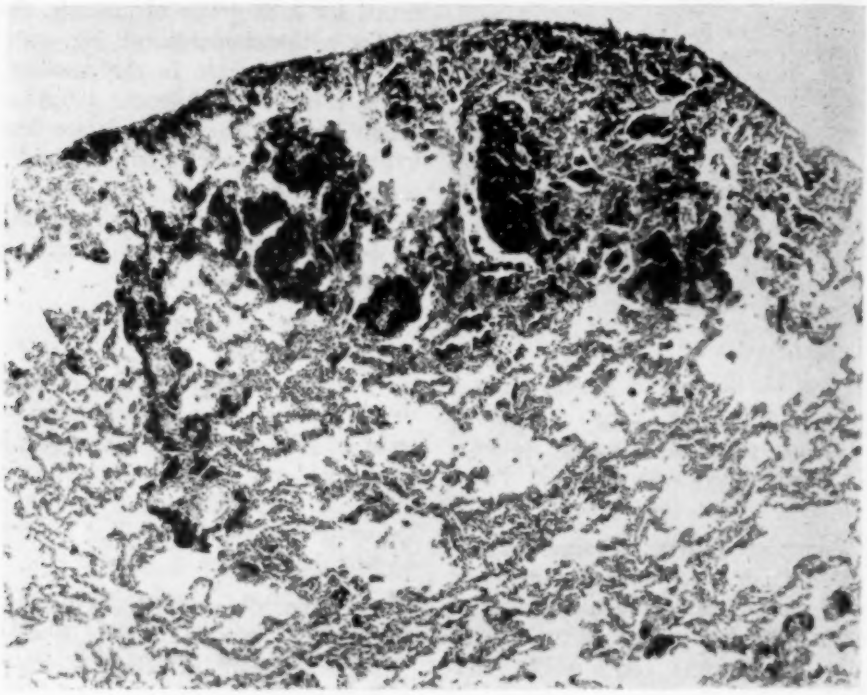

PLATE IV—S-36-1043. Microscopic appearance of lungs of same animal. Carbon pigment phagocytes compressed and elongated into spindle-shapes. 300 X.

abscesses of the liver, spleen, and kidneys. The pneumonic process was possibly a terminal one and associated with a parasitic infection. During the entire span of exposure in the anthracite group of animals, no deaths occurred. Two rabbits and 1 rat from the bituminous group died of confluent bronchopneumonia. The involvement in all was massive, contrasting strongly with the early, sharply limited inflammatory patches seen in the other groups. All of the animals which died in this chamber had acute bronchitis, and all showed marked pigmentation although death occurred after intervals of only 14, 21, and 40 days, respectively. In the animals exposed to coke, bronchopneumonia was the cause of death of 1 rat and 3 mice—the mice succumbing at the end of 2 weeks, while the rat died after 55 days. One of the mice also had necrosis with numerous parasitic cysts of the liver. No bronchitis was seen in this group.

Three rabbits died after exposure had ceased. One, a control animal, died after 43 days. Its lungs were essentially free from lesions, and contained only a rare carbon pigment phagocyte. Death was due to abdominal parasites, the entire mesentery being studded with opaque, encysted forms. Another death, also due to abdominal parasites, occurred in the coke cage 139 days after the end of the experiment. There was moderate carbon pigment phagocytosis. Except for edema there was no pulmonary involvement. The third rabbit, another control, succumbed to fibrinous pleuritis and bronchopneumonia 301 days after exposure. An occasional carbon-bearing phagocyte was found in its lungs.

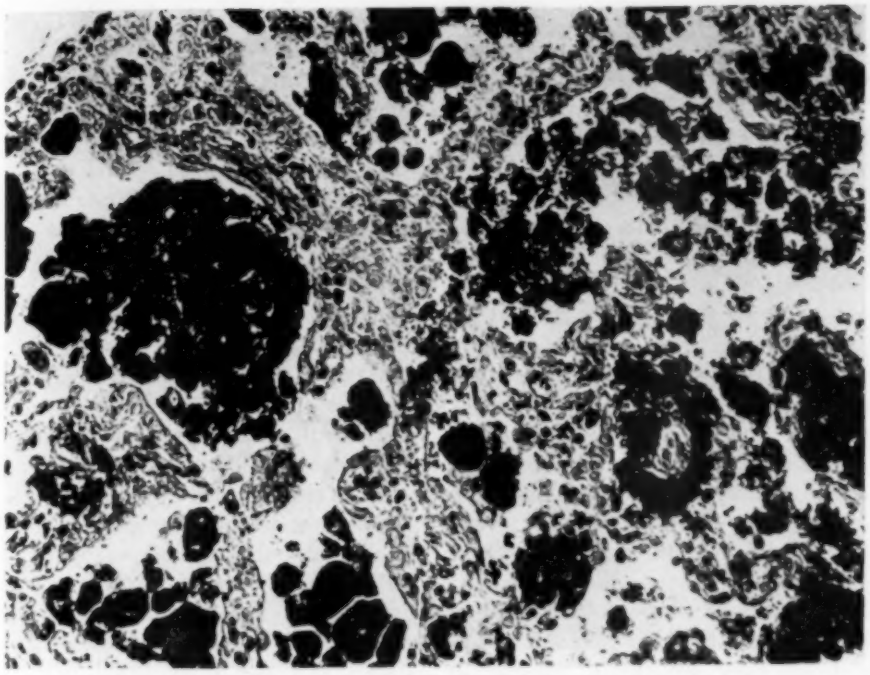

PLATE V—Another section of the same lungs (Plate IV) showing collagen. Mallory stain. 400 X.

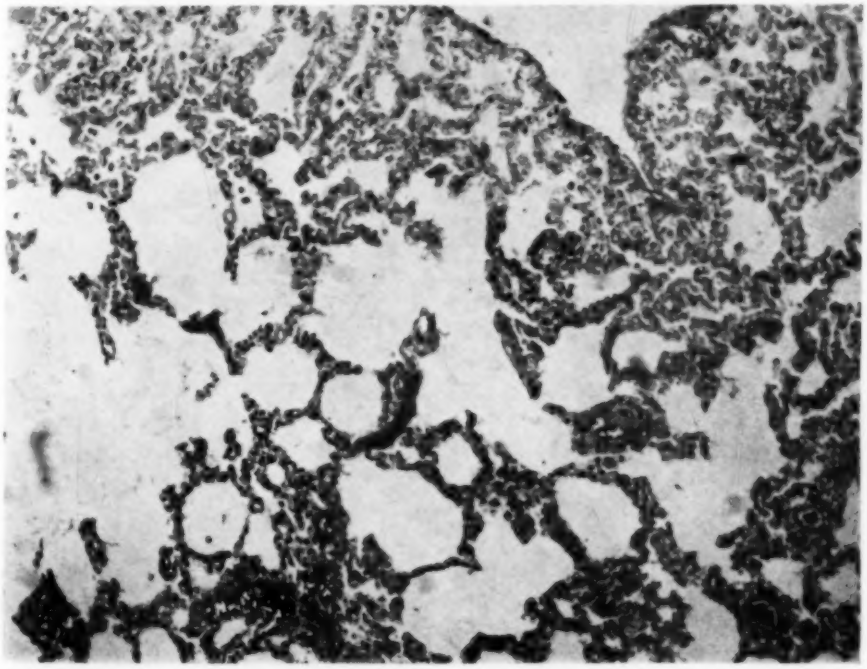

PLATE VI—S–36–1034. Lungs of rabbit in coke cage, 440 days after the end of exposure. Moderate pigmentation. No fibrosis. 175 X.

PATHOLOGICAL FINDINGS IN ANIMALS KILLED IMMEDIATELY AFTER CESSATION OF EXPOSURE

Two mice, 6 or more rats, and 2 rabbits from each chamber were chloroformed as soon as exposure ceased.

Due to their susceptibility to parasitic infections, the mice were unsatisfactory for our purpose. Five of the 8 had cysts or miliary abscesses of the liver. Yet in general, the amount of pigment seen in their lungs after only 17 days' exposure paralleled that found in animals exposed for longer periods of time; *i.e.*, an occasional carbon bearing phagocyte was seen even in the control animals which were breathing only pure, filtered air; very little more pigmentation was present in the animals exposed to anthracite; moderate deposits were found in those exposed to coke, while massive accumulations were invariably present in the group of animals exposed to bituminous coal.

Several rats which were born during the course of the experiment were removed from the cages at various intervals, but were not autopsied until the experiment was ended. None of them showed any significant pathological changes. The descriptions given below apply only to the animals which were on continuous exposure for the entire 80 days.

Many of the animals, irrespective of the type of exposure, showed some congestion of the lungs and patches of collapse or emphysema. Edema of the lungs was seen fairly frequently in all groups, but was, perhaps, most marked in the animals exposed to coke. No further mention will be made of these conditions except when particularly pronounced. Some of the animals showed evidence of increased goblet cell

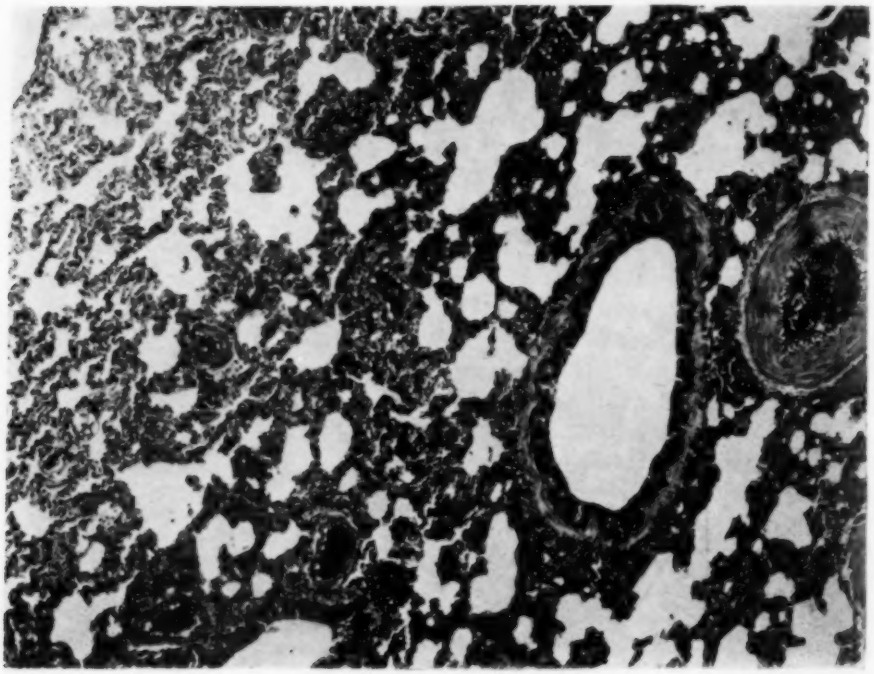

PLATE VII—S-35-883. Lungs of rat 70 at the end of 80 days' exposure to anthracite. No carbon pigment phagocytosis. 150 X.

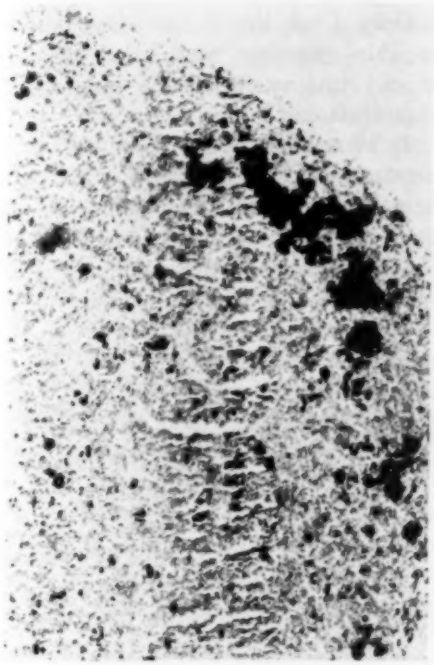

PLATE VIII — S–35–874. Peri-bronchial lymph node of rat 17 at the end of 80 days' exposure to bituminous coal. Large masses of carbon pigment both intra- and extracellularly. 16 X.

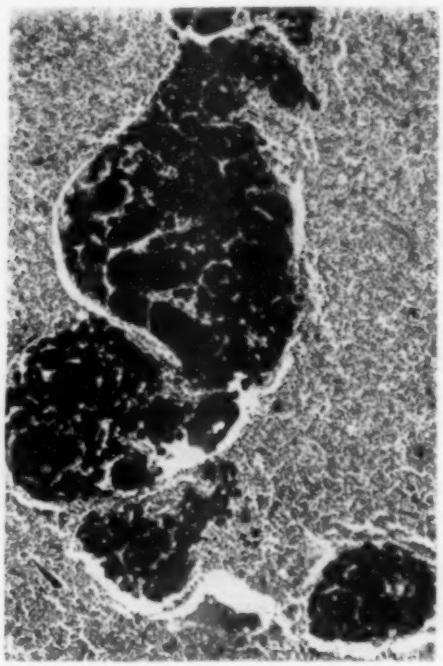

PLATE IX — S–36–1043. Peri-bronchial lymph node of rabbit in bituminous cage 429 days after exposure ended. Carbon concentrated in foreign body giant cell granuloma. 16 X.

activity, but this was neither sufficiently marked, nor sufficiently consistent to be conclusive. In the brief descriptions which follow, therefore, only the quantity and location of carbon pigment and the presence of purulent bronchitis and bronchopneumonia will be stressed while other pathological changes will be mentioned only *en passant*.

Sections of liver and spleen from each animal were carefully examined for carbon pigment phagocytosis. Many of these sections showed phagocytes loaded with black granules morphologically indistinguishable from carbon. All questionable sections were treated by a modified Perle method and reëxamined. None showed any phagocytosis of carbon. Neither was any carbon seen in the sections of nasal septum and bone marrow many of which were examined.

CONTROL ANIMALS

A very early bronchopneumonia and numerous miliary abscesses of the liver were the pathological findings in one mouse.

Among the rats, one showed a slight bronchitis; another had a tumor of the bronchi, in no way related to the experiment, and an associated bronchopneumonia.

Both rabbits showed some evidence of increased bronchial goblet cell activity.

Phagocytosis of carbon pigment in all of the animals was either absent or very slight.

ANIMALS IN ANTHRACITE CHAMBER

With the exception of 2 rats which showed patches of bronchopneumonia, none of the animals seemed in any way affected. Phagocytosis of carbon pigment in the lungs of the animals in this chamber was scarcely more marked than in those of the control chamber.

ANIMALS IN BITUMINOUS CHAMBER

One mouse had an acute purulent bronchitis and bronchopneumonia. There were no associated pathological changes in the liver.

While no pneumonia was found in any of the rats, 5 of the 6 showed evidence of acute purulent bronchitis. Two showed definite hyperplasia of the bronchial epithelium, with peri-bronchial lymphoid hyperplasia.

Only 1 of the 2 surviving rabbits in this chamber was killed at this time. Autopsy revealed a frank bronchopneumonia.

In all animals in the bituminous cage pigmentation of the lungs and peribronchial lymph nodes was intense. Both the gross specimens and the microscopic sections of these animals stood out boldly and could be differentiated at a glance from the tissues of the animals in the other 3 groups. Under the microscope the carbon was found to be both intra- and extra-cellular. The carbon-bearing phagocytes were crammed with pigment to the point of over-spilling; yet burdened as these cells were, they were evidently capable of considerable motility since many had migrated into the alveoli, bronchi, the

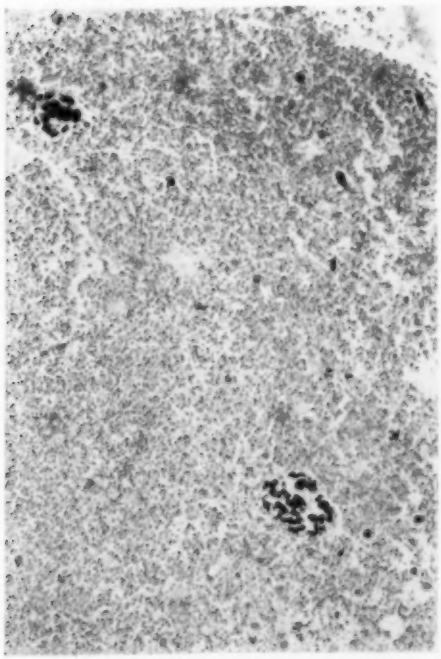

PLATE X—S-36-1034. Peri-bronchial lymph node of rabbit in coke cage, 440 days after the end of exposure. Moderate pigmentation. 16 X.

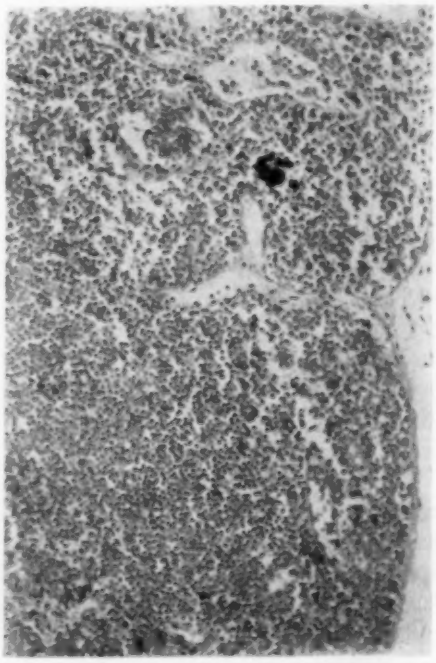

PLATE XI — S-36-1103. Peri-bronchial lymph nodes of rabbit in anthracite cage 436 days after exposure ended. Slight carbon pigment phagocytosis. 16 X.

inter-alveolar septa, the peri-bronchial and peri-vascular lymphatics, and finally into the peri-bronchial lymph nodes. In only 1 animal was there any extra-pulmonary transportation of pigment—a rat showing moderate carbon-cell invasion of the peri-pancreatic lymph node.

ANIMALS IN COKE CHAMBER

A parasitic infection (filariasis) with hemorrhage of the lung and multiple abscesses of the liver was found in a mouse; a rat had bronchopneumonia with acute and chronic bronchitis; both rabbits showed marked, diffuse edema of the lungs. Pigment phagocytosis was slight or moderate and most frequently seen in the peri-vascular lymphatics.

PATHOLOGIC EFFECTS IN ANIMALS KILLED 103 DAYS AFTER EXPOSURE

Four rats, 1 from each chamber, were chloroformed 103 days after cessation of exposure, in order to determine whether any fibrosis had yet occurred.

Of the 4 animals only the control rat had an acute bronchitis and bronchopneumonia. The other 3 showed no remarkable pathologic reactions. Peculiarly enough, pigmentation in the control animal, while only moderate, was slightly more apparent than in the animal exposed to anthracite. The lungs and peri-bronchial lymph nodes of the rat from the bituminous chamber were deeply pigmented. Practically all of the carbon was intra-cellular and practically all carbon-laden phagocytes were clustered within the peri-vascular lymphatics. It was in this animal that the first signs of fibrosis were noted. Some of the pigment bearing cells were definitely compressed and spindle-shaped—unmistakable evidence of early fibrous proliferation in the lungs. While carbon was deposited in moderately heavy quantities in the lungs of the rat exposed to coke, there was no suggestion of fibrosis.

PATHOLOGIC EFFECTS IN ANIMALS KILLED ABOUT 14 MONTHS AFTER EXPOSURE

In order to determine what pathological reactions had resulted in a still longer period of time (about 14 months later) it was decided to chloroform the surviving 8 animals: 1 control rat, 1 rat and 2 rabbits in the anthracite chamber, and 1 rat and 1 rabbit in each of the other two cages.

Neither the control nor the animals in the anthracite chamber showed noteworthy findings. The lungs and peri-bronchial lymph nodes of these 4 animals were but scantily pigmented. The reactions in the 2 animals exposed to bituminous coal were essentially the same as those found in the animals killed at an earlier date—*i.e.*, both the rat and the rabbit showed marked proliferation of the bronchial epithelium and marked peri-bronchial lymphoid hyperplasia. (It should be noted, however, that the latter finding was also present in many of the other animals, although perhaps not to such a marked degree.) Multiple abscesses of the lungs and acute purulent bronchitis were seen in the rat. Of great interest was the quantity and distribution of pigment in these 2 animals. Some of the carbon was still unphagocyted, but by far the greater part was contained within cells some of which had become elongated and compressed into spindled shapes. Considerably more pigment was found lodged in the peri-bronchial lymph nodes of these animals than in those formerly killed; furthermore, it was no longer diffusely distributed throughout the gland but was concentrated in huge foreign-body giant cells.

Of the 2 animals exposed to coke, 1 was essentially free from pathological changes while the other had a widespread infection suggestive of some fungus invasion. As in the case of the mouse which had a filaria infection, so, in this animal, there was an associated

bronchopneumonia. Pigmentation of the lungs and peri-bronchial lymph nodes was not marked.

SUMMARY AND CONCLUSIONS

The conclusions that may be drawn from this experiment must necessarily be limited because the equipment was imperfect, the animals were too few, and the time was short. Nevertheless, certain observations appeared to be constant for each of 3 respective groups of animals subjected for the same length of time, under comparable conditions, to the same concentrations of combustion products of anthracite, bituminous coal, and coke. A fourth series of animals placed in purified air constituted the control group.

1. Considering the weight gain of the control animals as 100 per cent, the anthracite rats gained 105 per cent, the coke animals gained 114 per cent, and the bituminous group 75 per cent; among rabbits, the anthracite gain was 84 per cent, coke 77 per cent, and bituminous coal 9 per cent.

2. The percentage of hemoglobin and the number of red and white blood cells per cu. mm. of blood rose consistently in all groups of animals, but this rise was least noticeable in the anthracite rabbits. The most immediate and pronounced blood changes occurred in the direction of leucocytosis, hemoglobin, and erythrocytic increase in the animals subjected to bituminous coal. Intermediate deviations were seen in the coke group.

3. Phagocytosis of carbon pigment in the lungs of the control animals was scarcely seen. It was slight in the animals exposed to anthracite, more obvious in those of the coke chamber, and very marked in those subjected to bituminous coal smoke.

4. The greatest number of uncomplicated pneumonias, and the greatest incidence of bronchitis occurred among the animals exposed to the products of combustion of bituminous coal.

5. Not even the faintest suggestion of fibrosis of the lungs was seen in the control animals or those exposed to anthracite or coke. In the lungs of animals exposed to bituminous coal, spindling of carbon-laden cells—apparently the earliest stage of fibrosis—was noted. It seems likely that soft coal, even when unaccompanied by other dusts, is capable of producing fibrosis if exposure is sufficiently prolonged.

6. The above results apparently justify further and more complete studies along the same line.

NOTE: The author acknowledges the assistance of Dr. S. R. Haythorn of the William H. Singer Memorial Research Laboratory and H. B. Meller, Head, Air Pollution Investigation, Mellon Institute.

Are Post-Mortem Statistics on Trichinosis Valid for the Living Population?

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THE number of all clinical cases of trichinosis reported in the United States from 1842 to 1936, is 4,543,[1, 2] This number is in striking contrast to the findings in autopsies reported from various parts of the United States. Since 1891 to the present time, systematic surveys for *Trichinella spiralis* on 2,065 autopsies have shown 234 positives, or 11.34 per cent.

One might be inclined to apply this percentage to the living population—that is, 14,742,000 persons (11.34 per cent of 130,000,000) infected with trichinella. This figure stands in such sharp contrast to the 4,543 reported cases that an explanation must be sought. There are either many millions of unrecognized cases of trichinosis in the United States, or the post-mortem statistics cannot be applied to the living population. Such application is not justified unless the incidence is verified for the living, even if the figures were statistically large enough and the autopsy material representative of a true cross-section of the population. In malaria or hookworm disease, the incidence at autopsy is much less than that in the living. On the other hand, the incidence of infection with tubercle bacillus in the living is the same as that at autopsy, as shown by diagnostic methods, especially the tuberculin skin test.

To test this question when applied to trichinosis, a simultaneous examination was made in autopsies and in living individuals in the New Orleans area, both groups being taken from nearly the same cross-section of the population.

To obtain the incidence in autopsies, 200 cases were examined by both the compressor and the digestion methods. Small pieces of diaphragm and pectoral muscle were compressed and examined, while a larger amount was ground up and digested by artificial gastric juice. Hinman,[3] in 1936, examined 200 bodies at autopsy from the Charity Hospital in New Orleans and found 3.5 per cent trichinous. The writer examined 200 cases from the Touro Infirmary and the Charity Hospital,* using 50 gm. of diaphragm and 10 gm. of pectoral muscle—a larger amount than Hinman used—and found 10 positive (4 white males, 2 white females, 3 colored males and 1 colored female), or 5 per cent.

The incidence in the living population was determined by means of Bachman's skin test.[4] The antigen was

* Aided by a grant from the Committee on Scientific Research of the American Medical Association.

TABLE I

	No. Cases Examined	Positive	Per cent Positive	Percentage Distribution by: Sex M.	Sex F.	Race W.	Race C.	Age in Years 0–19	20–39	40–59	60–79
Autopsies	200	10	5	5.8	3.7	7.1	3.4	0.0	3.3	4.9	10.0
Living Persons	200	10	5	7.1	3.8	6.3	0.0	0.0	3.8	5.3	15.7

prepared by dissolving dried and powdered trichinella larvae in Coca's solution. One-tenth c.c. of a solution of 1 part trichinella powder to 5,000 parts Coca's solution was used to test patients of the Touro Infirmary and the Hutchinson Memorial Clinic of the Tulane Medical School.† The injection was intradermal, and the reaction was read after 15 minutes. Coca's solution alone was used as control. Ten of 200 patients, or 5 per cent, reacted positively for trichinosis—5 white males and 5 white females. Two other cases, under treatment for hay-fever and asthma, also gave positive control reactions.

There were no negroes among those reacting positively, though 43 of the 200 persons tested were negroes. The failure to find a positive reactor in negroes was probably due to the difficulty of seeing the reaction on colored skin. Had the intradermal reaction shown as many positive cases in the negro patients as necropsy technics revealed, the percentage of positive cases in the living population would have been higher than that found in post-mortem cases.

Table I shows the comparative figures based on these two methods:

Considering the small number of cases, it is not possible to make conclusive statements, but comparison of the findings in the 2 groups shows great similarity, even in the sub-groups of sex, color, and age. It is suggested that the post-mortem findings in trichinosis may be representative for the living population. None of the individuals studied in either series gave a clinical history of trichinosis. It is believed that a large proportion of the positive cases is so lightly infected as not to show clinical evidence of the infection, thus explaining the discrepancy between reported cases and autopsy findings.

† The writer wishes to express his appreciation for the kind coöperation of Dr. Rigney D'Aunoy, Pathologist, Charity Hospital; Dr. John A. Lanford, Pathologist, Touro Infirmary; Dr. I. I. Lemann and Dr. D. N. Silverman, Touro Infirmary; and Dr. H. H. Russell, Hutchinson Memorial Clinic.

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An Outbreak of Typhoid Fever in Grand Rapids, Mich.

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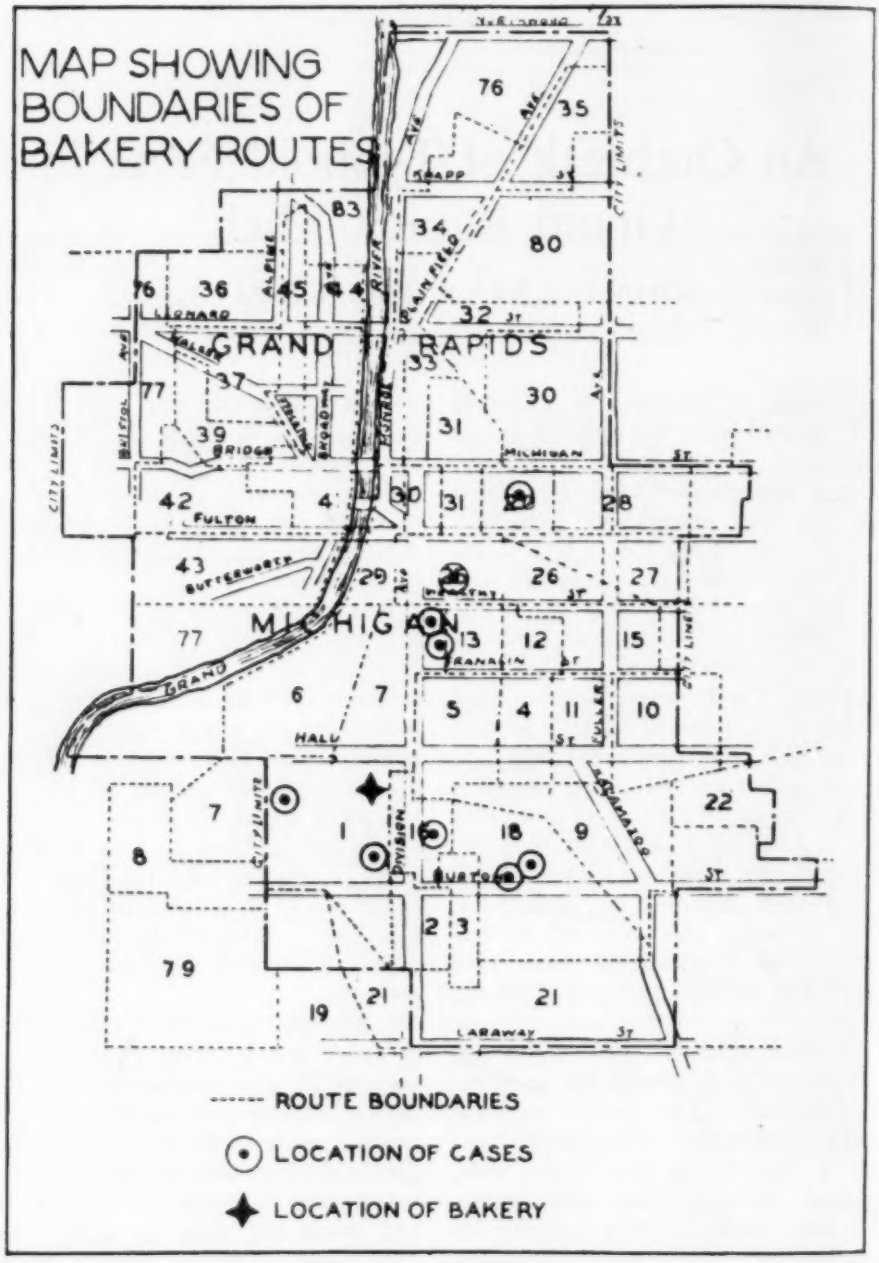
WHEN, on December 9, a case of typhoid fever was reported to this department, it occasioned no distinct alarm or apprehension even though this city has been remarkably free from typhoid fever for the past 5 or 6 years. When later in the day another case was reported of an individual living in the same neighborhood, still no unusual alarm was experienced. When, on December 11, however, another case was reported, followed by still another on the 16th, the department began to take an active interest in the situation. These 4 cases were followed by others, until a total of 9 altogether were reported to this department, the last one having been reported on January 4, 1937. During this interval it was noticed that 4 additional cases were reported in the nearby territory of the county.

The usual epidemiological procedures were started and brought out some interesting facts. The first 2 cases reported received their milk supply from the "S" dairy; the next 2 cases to be reported obtained their milk supply from the "G.R.C." dairy and the 5th case bought his milk from a neighborhood store. The 6th case obtained milk from the "L" dairy and the 7th from the "L.P." dairy; the 8th from the "B" dairy; and the 9th from the "S" dairy, the same as cases Nos. 1 and 2. All of these dairies are pasteurizing milk plants and distributed no raw milk whatsoever. All of these dairies were investigated thoroughly; stool specimens were taken on individuals who were at all suspicious, all of which were negative. Pasteurization methods were checked closely and found to be satisfactory.

The water supply at this time was also checked very thoroughly, particularly as an early spot map showed evidence that the water supply of the first 5 cases came from the same lateral. Case 6, however, was located in the southwest section of the city, the water supply of which came from an entirely different source of supply after leaving the filtration plant. The water supply was found to be entirely safe and it showed sufficient chlorine with no *B. coli* for many months previous.

Stool specimens from the contacts of every one of these cases were all negative, 3 specimens from each contact having been examined. The history of each individual was checked closely to determine whether or not he or she had been out of the city and had drunk any water or milk at that time. Only 1 patient gave a history of having been out of the city during the period of incubation. The water supply at the place where this patient had visited was checked and was found to be uncontaminated.

Up till the time of the reporting of the 7th case the department was puz-



zled as to the origin of the outbreak, inasmuch as the milk and water supplies were found to be safe and uncontaminated, and we were unable to locate any carrier from contacts. It was realized that the occurrence of 6 or 7 cases within a period of 2 weeks must be based on some common vector or focus of origin because, as has been mentioned before, this city has been remarkably free from typhoid fever for the past 5 or 6 years.

Due to the perseverance of John Soet, the sanitary officer, a re-check was made of these cases several times. After persistent questioning he finally found that all of the cases had been procuring their baked goods from the same bakery. Further inquiry elicited the information that all the cases had eaten cream puffs from this bakery. Suspicion at once was directed toward this food industry, inasmuch as this was the only common point of food supply. The question of fresh vegetables from peddlers was gone into extensively but was discarded when no positive evidence could be obtained.

The employees of this bakery, some 231, were all examined immediately, particularly with reference to past history of typhoid; 3 stool cultures were obtained from each employee; and an extensive survey was made of the bakery itself. Following the preliminary examination and survey of the sanitary methods, the number of employees under suspicion was limited to those who were employed in making ices, custards, and cream puffs, and to those who handled the bread after it came from the oven and before it was wrapped. Stool cultures were obtained from this group daily, but examination showed negative results for the first week. Finally on the 7th day a positive culture was obtained from an individual who was employed in the filling of cream puff shells with custard and whipped cream. Suspicion had cen-

Case	Age	Sex	Onset	Disposition	Specimen B	W	F	U	Bile	Milk Supply	Water Supply	Contacts
					+	+	—					
							—	—				
B. D.	8	M	11-21-'36	Hospital	+		—		..	Neg.	Neg.	All neg.
							—	—				
					+		+					
					—	+	—	—				
							—	—				
							—	—				
F. T.	13	F	11-23-'36	Hospital			—	—	..	Neg.	Neg.	All neg.
							—	—				
							—	—				
							—	—				
G. R. K.	26	F	11-23-'36	Hospital	—	+	—		..	Neg.	Neg.	All neg.
							—					
					+	+	—	—				
							—					
L. A.	48	M	11-28-'36	Hospital	+		—	—	..	Neg.	Neg.	All neg.
							—	—				
					—	+	—					
E. W.	20	M	11-30-'36	Home			—		..	Neg.	Neg.	All neg.
							—					
					+	+	—	—				
							—					
R. K.	19	M	12- 4-'36	Home			—		..	Neg.	Neg.	All neg.
							—					
					—	+	—					
F. E. G.	31	M	12- 6-'36	Hospital					..	Neg.	Neg.	All neg.
					+	+	—	—				
							—					
S. P.	50	F	12- 7-'36	Hospital			—		..	Neg.	Neg.	All neg.
							—					
					+	+	—					
W. W.	11	M	12-30-'36	Home					..	Neg.	Neg.	All neg.

Grand Rapids Health Dep't

tered on this part of the industry early, and production had been curtailed even before the finding of the carrier.

The first positive culture on the carrier was obtained January 18. The carrier, of course, was at once taken out of employment and placed under the supervision of this department. The last case in this outbreak was reported on January 4, 1937, the onset of which was December 30, 1936. The incubation period in this entire outbreak, based on clinical evidence, must have been between November 21 and December 31, 1936. The carrier is evidently of the sporadic type as the organisms are not found to be present in the stool continuously. She has been in the employ of the bakery since May, 1936; she has nothing significant in her past history, and the family history is negative as regards typhoid fever attacks.

Two cases in the county, which occurred at the same time as those in the city, were investigated, and it was found that both of these cases had also procured their bakery goods, including cream puffs, from the same bakery.

Further investigation at the bakery disclosed that their icings were not boiled but mixed without heating and then applied to cake, cream puffs, and other products. The custards and whipped cream are made largely from condensed and powdered milk. The statement was made that the custards were boiled but it is entirely possible that, in treating large amounts of this product, the innermost parts may not have been subjected to boiling temperature, or the product may have been contaminated by the carrier in the process of filling, which is more than logical. These cream puff shells are baked first and the filling is introduced into them from a large bag, but there is a great deal of chance of contamination when the tops of these shells are closed.

It was almost inevitable that this bakery was the source of infection of the outbreak inasmuch as all of the individuals procured their bakery goods from the same bakery; also the fact that no more cases were reported following the cessation of the production of cream puffs, was a significant factor, and the finding of the carrier, of course, clinched the epidemiological evidence in this outbreak.

This bakery supplies upward of 8,000 customers in the City of Grand Rapids and the surrounding metropolitan area in the county. It also supplies baked goods to several towns in the area of 50 to 60 miles from Grand Rapids. At least 1 case of typhoid fever has been reported in a town 21 miles from here, which gives a history of having eaten cream puffs from this same bakery.

Changing Public Health Practices and Problems*

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WITHIN the last 2 weeks an important professional group in the United States attempted to formulate certain primary principles regarding the development of a national health program. As its major bases it assumed that (1) the health of the people is a direct concern of government and a national public health policy directed toward all groups of the population should be formulated; (2) adequate medical care is an essential element of public health and local, state, and federal governments need to supplement present efforts of the medical profession to provide it; and (3) the problem of economic need and the problem of providing adequate medical care are not identical and may require different approaches for their solution.

The crystallization of the recognition of these principles in 1937 is perhaps more important than the principles themselves, for after all they were succinctly summarized as far back as 1854 by Sir John Simon in the City of London Reports when he first recommended the creation of a national Ministry of Public Health, to care, as he put it, for "the physical necessities of human life." It is likewise no novelty to accept with increasing seriousness the old concept that the saving of lives or the postponement of death are the major purposes of health work. When we couple with these objectives the maintenance or elevation of physical and mental efficiency, we have established for the present at least the basic goals of public health service. The definition of these services, the evaluation of technics for accomplishing and providing them, and the criteria of progress in accomplishment, are again subject matters which have long held the attention of the public health profession.

What is important in the pronouncement of the principles noted above, is that the time has apparently arrived for a universal agreement upon objectives, tacitly accepted by some and publicly rejected by others in past years. Let us discuss, for a moment, their implications for public health practice.

In less than 100 years the expectation of life at birth has increased from 35 to between 60 and 65 years in the United States. The major part of this increase in expectancy has been accomplished largely in the control and reduction in communicable diseases.

Concurrently with this change, profound changes in population distribution, both as to age and as to numbers, have taken place. The leading causes of death have in less than a

* Read before the Annual Conference of Health Officers & Public Health Nurses, Saratoga Springs, N. Y., June 24, 1937.

quarter of a century shifted in major aspects.

That these changes should have reached a critical turning point in the last few years has been emphasized to a greater extent than ordinarily, largely because we have just passed through a depression and post-depression period. Striking prophecies as to the problems of public health of the future, however, antedated the depression. For example, in the evaluation of the Cattaraugus County Health Demonstration in 1931, Winslow pointed out with uncanny vision the following forerunners of the principles of 1937:

1. The one great outstanding lesson of the Cattaraugus County Health Demonstration is the urgent importance, the great difficulty, and the high cost of adequate health service for rural communities.
2. There is obviously but one way out of this difficulty—state aid.
3. Surely the most prosperous nation in the world's history must find a way to equalize the distribution of the fruits of medical and sanitary science through all its areas.

These conclusions were written before and not during one of the worst depression periods which this country has experienced. Strangely enough, the depression period, through the emphasis on the necessity of supplying adequate medical care for the indigent poor, has given the fillip to the crystallization of principles enunciated in the early part of this paper.

To put these principles into action, it is important to summarize the changes in concept regarding disease prevention which have occurred in the last 25 years and upon the basis of which future perspective and method must rest. Fortunately, within the past 2 years, critical analyses of these questions have been made on each level of government and by voluntary groups interested in the scientific methodology of disease prevention and the promotion of health. Selected examples of these recent investigations may elaborate certain of the problems of the future.

MINNESOTA

Within the past year the Minnesota State Planning Board, through a subcommittee on public health, has attempted an evaluation of its public health practices and an exposition of its public health program for the future. The findings of that committee in general terms are applicable to the problems elsewhere in the United States.

It places emphasis, first of all, upon the fact that the 7 leading causes of death in Minnesota today are, in the order of their quantitative importance:

1. Heart disease
2. Cancer
3. External causes
4. Cerebral hemorrhage
5. Pneumonia
6. Nephritis
7. Tuberculosis

The committee further emphasizes that these were not always the 7 leading causes of death as is illustrated in the tabulation listed in the report and reproduced in this paper as Table I.

The changes in causes of death have come about because of radical changes in the character of population. This in turn is the result of the fact that the group of communicable diseases which once took a heavy toll of life has now become of relatively slight importance. When to these diseases we add accomplishments in the reduction of smallpox, diphtheria, and typhoid fever, we find a population of a changing age composition that has escaped the hazards of infancy and contagious diseases, and has entered a period of life when it is confronted by hazards of a totally different character.

Of the 7 major causes of death, only 2, tuberculosis and pneumonia, are communicable in character and it is unfortunately true that of the entire

TABLE I

SEVEN LEADING CAUSES OF DEATH

(Report of Minnesota State Planning Board, December, 1936)

Rank	1910	1915	1920	1925	1930	1935
1	Tuberculosis	Heart Disease	Heart Disease	Heart Disease	Heart Disease	Heart Disease
2	Heart Disease	Tuberculosis	Cancer	Cancer	Cancer	Cancer
3	Pneumonia	Pneumonia	Tuberculosis	External Causes	External Causes	External Causes
4	External Causes	External Causes	Pneumonia	Pneumonia	Cerebral Hemorrhage	Cerebral Hemorrhage
5	Cancer	Cancer	External Causes	Cerebral Hemorrhage	Pneumonia	Pneumonia
6	Diarrheal Diseases of Children	Nephritis	Influenza	Nephritis	Nephritis	Nephritis
7	Nephritis	Cerebral Hemorrhage	Nephritis	Tuberculosis	Tuberculosis	Tuberculosis

group of leading causes of death only these 2 show a downward trend.

The remaining 5 present a public health problem radically different from those which the public health profession has attacked in the past. These causes are in the degenerative diseases group, comparable with the obsolescence and depreciation of physical equipment with which the engineer has been familiar for years. They do not lend themselves to the simple mass community attack so familiar in the sanitation field and to a lesser degree in the field of communicable disease control. Their very nature, however, makes them more amenable to preventive measures, wherever these are understood, and to alterations in the hygiene of the individual.

As the Minnesota report so strikingly concludes, the leading causes of death of today "represent the field of adult hygiene, a field of medicine the interest of which to both the individual and the state must be, for some time to come, a matter of increasing concern and importance."

MASSACHUSETTS

In the report of the Special Commission to Study and Investigate Public Health Laws and Policies of the Commonwealth of Massachusetts (December 2, 1936), the commission cautions the citizens of Massachusetts not to rest too easily upon the public health achievements of the past and the favorable conditions of the present. It, too, points with pride to the enviable records in the control of smallpox, typhoid fever, and diphtheria, in the remarkable reductions in tuberculosis and infant mortality, to the first state cancer and pneumonia programs, to an excellent syphilis control program, and to the very successful operations in the milk and water sanitation and sewage disposal fields.

Although the commission takes great pride in these achievements, it warns that the governmental structure upon which public health programs of the future are to be constructed must be adapted to the changing needs and problems of society.

In Massachusetts, as in Minnesota, strengthening of local public health administration with increasing influence of the state, both in administration and in financial responsibility, is suggested.

As in most other instances the commission takes great care to indicate that it is not opposed to the theory of the greatest possible degree of local autonomy, "but believes that in certain matters it must be amended lest

it fall into disrepute and disappear."

In Massachusetts, as elsewhere, renewed emphasis appears on the need for greater coördination of public health activities, voluntary and official, to avoid duplication and conflict.

A demand for increased professional ability of persons employed in public health work is given equal importance with the governmental structure under which they labor. In this precept the Massachusetts Commission's findings parallel those of other investigations.

As to the scope of proper public health activity it recognizes that "Within recent years there has been a progressive broadening of the scope of public health. It is equally apparent that with the changing social and economic structure it becomes impossible to define what should be the desirable limits of public health activity. It seems inevitable, however, that government will more and more render certain essential services, and it is therefore important that there should be a guiding philosophy as to the relationship between these personal services and the private practice of medicine."

MARYLAND

The Rockefeller Foundation has just completed for the State of Maryland a review of its public health administration, carried out under the general direction of a sub-committee of the Maryland State Planning Commission.

The purposes of this review were to assemble sufficient information to give a composite picture of the present status of state and county health administration in Maryland in its relation to government in general, to closely allied official agencies, and to nonofficial agencies engaged in rendering important health services. Preëminent in the findings are the emphases upon the necessity of trained and efficient personnel, upon the functional integration of the component parts of the state organization and of the local subdivisions thereof, upon the desirability of extensive service in health education, and upon the developments of comprehensive venereal disease and tuberculosis programs.

It emphasizes, as in Minnesota and in Massachusetts, the great importance of so integrating the public health activities of the state as to curtail and prevent the scattering through various state agencies of activities which by their nature should be functions of the health department.

So important did the investigators find the interrelation of public health activities with other governmental necessities and duties that they recommend strongly the creation of an experimental county undertaking, for the development of an integrated public administration unit, wherein the various services of government, such as public health, education, social welfare, economic welfare, etc., may be administered as interrelated members of a unified county program. Their recognition of the inter-competitive phases of public health activities with all the other demands upon government led to the desirability of developing such an experimental county administrative unit. One of the major needs in Maryland as elsewhere would appear to be a horizontal uplifting of these several services of government, rather than an undue emphasis on the vertical uplift of individual services. As the public health demands upon government funds increase, this integration of collateral governmental operations with public health activity will assume an increasingly important position. The development of such integration is strongly recommended in the Maryland report. It is an effort to anticipate the results of undue competition for public money and service rather than to pay at a later date the penalties of the failure to recognize their significance.

FEDERAL

The great impetus given to the public health movement by the financial aid included in the Social Security Act is best exemplified by the 6 point program of activity which Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, has recently announced. On the federal level of government this program supports and parallels the thinking represented in the state surveys herein summarized. Dr. Parran proposes—

1. To finish the job of wiping out tuberculosis.
2. To wipe out the dread disease syphilis, "the end results of which crowd our jails, our poorhouses, and our insane asylums."
3. To make available to people everywhere facilities for the proper diagnosis and treatment of cancer, which in his opinion would reduce by 20 per cent the deaths from this disease.
4. To reduce the "disgracefully high" death rate of mothers in child birth and of babies in their first month of life.
5. To correct conditions resulting from improper diet.
6. To restore crippled children to lives of usefulness.

These objectives require high degrees of governmental coördination and integration, changing concepts and methods in the attack on disease and expanding horizons of operation.

VOLUNTARY ASSOCIATIONS

Without reviewing in detail the contributions of different voluntary groups, reference should be made to the studies by the Milbank Foundation under the late Dr. Sydenstricker; the recent publication of the New York Tuberculosis and Health Association, *Hospital Care for the Tuberculous in Metropolitan New York; American Medicine,* issued by the American Foundation; and the report, *Public Health and Social Problems in the United States of America,* sponsored by the Health Organization of the League of Nations and the U. S. Public Health Service.

The last report is particularly striking in its reflections on consolidation of federal health agencies, and on the relation of federal to state and local governments. It comments particularly upon the fact that the last National Board of Health in the United States created in 1879 was repealed in 1882.

The concluding observations of this commission of foreign experts sponsored by the League of Nations is of more than special interest to students of public health practice in the United States.

It is useful to emphasize the impression made upon the visiting European hygienist by the impact of this world which is so new to him. In the first place, he is astounded by its size and its diversity, its considerable resources, the habits, methods of work, and aspirations of its people. He is even more bewildered by its constitution, its administrative machinery, its varying laws, and the special powers of the individual states. He is amazed by the multiplicity and diversity of its medical, public health, and social problems, requiring for their solution varying methods and formulae adapted to the manifold needs of regions which differ so widely as regards climate, population, and natural and acquired resources.

Daring reforms were born of the economic depression. They form part of a broad program capable of neutralizing the effects of the depression and of preventing its return. They are bringing about a social evolution and, in some instances, an actual transformation of living and working conditions. Here again is a profoundly interesting field of study, always provided that the underlying causes of the action taken or proposed are understood. For, as in many countries, including those of Europe, new methods are being sought to insure to the

economically weaker classes of the population a greater measure of health and security by the improvement and more perfect adaptation of public health and social organization—including facilities as well as legislation—to the actual needs.

Here it is important to emphasize the efforts that are now being put forth, or which have already borne fruit, to promote the coördination of all the activities exerted on behalf of hygiene and health protection. Attempts to promote such coördination have been made in all countries; its value has been emphasized by commissions convened by the League of Nations, which have set out the ways and means of bringing it about. In the United States, such coördination is attempted at every level of government—federal, state, municipal, and rural. Its realization is all the more important, and even more difficult, because it is opposed by obstacles inherent in the national and state constitutions, which give the states and cities powers and privileges which they ardently desire to retain.

Strangely enough one of the important summaries of the changing aspects of public health activity during the past 10 years may be found in *Middletown in Transition*. In this volume the Lynds find "As in certain other phases of its life, Middletown's chief innovations in caring for health during this decade have come at the two ends of the economic scale: the important addition of the new hospital . . . during the boom years, and the extension of free health service to the needy under the impact of the depression."

They also sense one of the important disabilities which are beginning to arise in public health and other social activities from the fact that "The great majority of local social changes . . . are not locally generated but are diffused to Middletown, against the pressure of local inertia and resistance, from outside agencies." This tendency of human beings to resist change from external sources is emphasized by these two sociologists, who point out that people make small minimum adaptations by a process of "inching along" and not by heroic turnovers.

CONCLUSIONS

The investigations herein briefly reviewed may lead to generalizations which may be helpful in delineating the future programs of public health. Even at the risk of undue simplification, a statement of such generalizations should be provocative in discussion. They are as follows:

1. The field of public health activity is expanding. It may no longer be restricted to the simple list of communicable diseases prevented and of community sanitation.

2. The more familiar and older activities must continue with equal force to hold the gains which have already been made.

3. Causes of death less important a quarter of a century ago have now assumed the place of greatest prominence. They are the diseases of adult life, and represent the results of the impact of heredity, environment, and early experience, biological and otherwise, upon the individual. They require for control new technics, a wider base, more money, and more intensive activity on all fronts.

4. The maintenance and elevation of physical and mental efficiency must assume new importance in the public health field. The vast disability created by illness in the industrial and in the general population offers a tremendous field for future combined public and private service.

5. Increased facilities for hospitalization, dispensary service, nursing facilities, and medical care of all types are obvious requirements for the future.

6. These activities presuppose the development of professional services of an amount and of a quality not yet available. Facilities for training of personnel must be improved, extended, and maintained.

7. All these enterprises will require more money and hence a gradual extension of state and federal intrusion into the local public health field. With such intrusion the obvious advantages of higher levels of performance, of increasing standards of action, and of ex-

panding research will ensue. Jointly with these advantages, however, the ever present problems of integration with lower levels of government and of coördination of all levels of government will emerge with greater intensity. To these problems, all students of government must give serious and continuing thought. To steer between the Scylla of declining efficiency of and interest in local government operation and the Charybdis of throttling centralization offers the real challenge in the public health movement in the next 10 years. To meet the demands of an ever-expanding horizon an ever-expanding budget will be necessary. To obtain and use it successfully, will require a strict adherence to the age old axiom that government without understanding on the part of the people will fall of its own weight.

Local and central governments may be depended upon, with the continuing support and advice of voluntary groups, to develop the objectives of public health and the methodology of attaining these objectives, but their success must depend, particularly in the shifting and expanding zones of public health activity, upon public understanding and sympathy in the most remote hamlet as well as in the state and federal capitals. The practitioner in public health must add to his armamentarium of medical and public health science a new concept of governmental relations, in which local autonomy and interest are revived under the stimuli of intelligent state and federal agencies.

On this occasion and in New York State it may be particularly appropriate to close by referring to two paragraphs by a former Governor of New York, in his Foreword to *The Report on Public Health in New York State by the State Health Commission of 1931.* In them President (then Governor) Roosevelt summarized the future issues before the public health profession in the following terms:

> The first public health advances were made by doing things for people. Purify the city water supply and during the next few years the Albany typhoid rate drops from 90 to 9; pasteurize milk supplies and there is immediate decrease in infant mortality. In these typical details of mass public health, the work of our state and local administrations ranks high. The report of the Commission of 1931, however, may be contrasted with that of the Commission of 1913 not only by virtue of its greater emphasis upon better local health administration and the decentralizing of state health functions, but also by its clearly drawn picture of the transition of the public health movement from the single problem of attaining mass health to the double task of maintaining mass health and controlling preventable disease in the individual.
>
> This is a more difficult task than that of establishing wholesale preventive measures in which the people themselves are not required to take an initiative. It involves the fullest use of public health education, so that citizens may understand and coöperate with activities necessary for their own welfare. Important as are the laws which the Commission has recommended, of far greater importance is intelligent action on the part of the individual and of the community.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

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AMERICAN MEDICINE

UNDER the title above, the American Foundation has painstakingly collected the opinion of 2,100 persons from all the states of the Union, involving a correspondence of some 5,000 letters to and from representative medical groups and individuals, including general practitioners, specialists, deans of medical schools, boards of medical licensure, hospital superintendents, medical educators, and a few whole-time health officers.

The task must have been a huge one. It has been well done, presenting as it does for the first time a comprehensive self appraisement by a great profession of its own successes, shortcomings, and needs. A valiant attempt has been made to give due weight to what seem preponderating opinions on various phases of the subject without slighting those of minor groups or outstanding individuals. Wisely, no definite conclusions or recommendations are made by the authors.

On the whole, the picture presented is a gloomy one, although expressed hope for better things serves in part to lift some of the feeling of discouragement and even despair on the part of a few correspondents. Many of them seem to stand too close to the picture of their individual surroundings to evaluate its true meaning. Only the marks of the brush and daubs of paint attract the eye and excite comment. Others fully grasp the meaning of the technical, social, and economic evolution of medicine and give logical and well thought out suggestions for making orderly, constructive progress along the road of benefit not only to the public weal, but to that of the profession itself.

It is not surprising that an undiscerning public in mental confusion should view modern medical practice as a sort of three-ring circus in which their attention is so constantly distracted from one innovation to another that they are unable to concentrate on any one outstanding feature. Older persons must often regret that they are no longer able to go to a "good doctor" whom they know personally and by reputation, whose head is supposed to contain all that

is really valuable in medical practice, and who makes it unnecessary for them to await the convenience of this or that alleged authority, usually recommended by friends, for the particular ailment from which relief is sought.

That those within and without the medical profession of this country believe that the conduct of medical practice is suffering from a number of serious and interrelated ailments must be given weighty consideration in any fruitful discussion of ways and means to treat them. A general attitude of *laissez-faire* and individual self complacency will be of no avail. Wrapping one's self in the Hippocratic toga of professional pride and declaring that medical practice is not a "commodity" to be bought and paid for sounds well, but is little more than a meaningless and outmoded gesture. Good medical service, whether rendered by groups or individuals, may be compared to a newly mined diamond whose covering of clay completely hides its real value except to a very few who judge by more than they can see on the surface. When, however, it is cut and polished, the component parts are eagerly sought by many who would not have stooped to pick up and examine what seemed to them an ordinary and unattractive pebble.

How long must the parrot-like cry of "state medicine," "organized medical profession," "personal relationship between physician and patient," act as a stumbling block to logical action for improving medical practice and creating a demand for that which is good? If by the first is meant retaining for pay by official health organizations the services of medical practitioners on full- or part-time, the task of King Canute in trying to hold back the waves of the sea was child's play compared with that which faces any individuals or group combating so-called "state medicine." It is here; is growing by leaps and bounds; it was and is an inevitable human need and so recognized the world over.

"Organized medicine" has never existed as a national or even state body except on paper. Experience has shown that the better type of physician cannot be organized except under the pressure of a great crisis, and usually one which threatens the public health.

Personal relationship between physician and patient is unquestionably of value, especially in the care of the neurotic without discoverable organic defects, who, in this country, constitutes a goodly proportion of paying private practice. Unfortunately, however, it is the chief stock in trade of the physician with the "perfect bedside manner," ornate offices and equipment, and little else; of all quacks, charlatans, and cultists, and licensed physicians who never should have been admitted to the practice of the profession.

To those who are addicted to crossword puzzles, the query of what constitutes "available medical service" and "competent medical service" continues to be intriguing. "Available" medical service would seem to be service which can be obtained when it is needed. "Adequate" medical service can never be defined except in individual cases and even then it is often difficult to obtain an expression of opinion from competent medical men as to whether a given service was adequate or inadequate. A little more common sense and less splitting of hairs on these moot subjects would seem to be highly desirable in the interest of progress. The very nature and inevitable termination of chronic disease, dissatisfaction with the treatment received, frequently with no justification, the human characteristics, especially marked among Americans, of willingness to take a chance and try anything once, are leading numberless real and imaginary sufferers to seek false gods. Thus we find the clear springs of

orthodox, scientific, medical practice daily becoming more befouled by the vile scum of quackery under whatever ridiculous Latin, Greek, or Biblical name it chooses to masquerade. The demand for services marketed by these cults is so insistent that it reaches the ears of politically minded legislators who act on a demand for legal recognition, not according to common sense or with regard for the public health, but purely on the basis of an estimate of votes, pro and con.

Year after year the more conservative states, usually those with well organized health departments, continue with more or less success to fight off the motley crowd of cultists who besiege legislative halls at every session. Other states yield to what seems the inevitable and continue to admit them to practice under the sweet sounding but undescriptive status of limited licensure, the limits being determined by the ingenuity and public influence of the licensee. At the present rate of admission to the practice of these cults in certain states, notably California, there will soon be little or no place for the legitimate practice of medicine.

Is the practice of medicine and surgery of concern to the public health? None but the most hide-bound reactionary can doubt it. It makes little difference to the victim whether he dies from undiagnosed scarlet fever, diphtheria, or ruptured appendix. Each is set down in the record as a preventable death in the statistics of the state and federal health departments. Many groups, official and unofficial, have attempted to evaluate the practice of medicine in this country. In the latest survey, but two and one-half per cent of opinions were expressed by medical health officers, and yet what group of individuals stands closer to the medical practitioner, what group knows more truly the qualifications and characteristics of the physicians by which it is surrounded, or sympathizes more sincerely with the various difficulties constantly confronting them? The worth while health officer soon learns that the success of his work for the public health depends in no small measure on the coöperation which he is able to bring about between his office and the local practitioner of medicine. Each needs the other and neither can go it alone without unfortunate and sometimes disastrous results. It is said that "a good wine needs no bush." This does not apply to the unostentatious, serious minded and scientific physician who has no use for cheap publicity. He needs legitimate backing to have his worth established and his services sought. On the other hand, the successful health officer needs to be a propagandist in the interest of public health, using every legitimate and dignified means to support those factors upon which personal and community health depend, not the least of these being the quality of the medical service available to the community.

Here, then, is a natural alliance already effective to a greater or less degree in a number of states and one which should be set up and developed in all of them. Apparently, the medical profession is not opposed to and as a whole approves of full-time health officers for states and large cities, but is definitely set against the health officer appointed, not by reason of qualifications, but for political motives, and quite often with justice thrown out of office in the same way. Yet medical societies cannot wholly escape responsibility for this state of affairs, which prevails much too commonly throughout the nation.

Is it not time to recognize the fact that health administration and medical practice in the nation as a whole are woefully lacking in uniformity of high standards? Other countries have successfully met this problem by various methods of federal control. Before such a system can be adopted in the

United States, public opinion must be brought to its support as well as the interest and coöperation of other state and local agencies directly or indirectly concerned.

Constitutional objections will doubtless have to be met and dealt with, as well as a formidable opposition from political and personal interests. These should not prove insurmountable.

As a result of various surveys, individual studies and authoritative opinions, factual data are available regarding the problems which must be faced in the field of public health, medical practice, hospital management, licensure, and public health nursing, which should carry conviction to all those with the knowledge of the subject whose minds are not irrevocably closed to progress. Individual studies may still be necessary, but the time has arrived for taking action on the facts that are already known. To this end it would seem highly desirable to form a national committee, under whatever auspices may seem desirable, of outstanding representatives of the interrelated fields of activity involved in the problem to formulate at an early date ways and means for its solution. Even though remedial recommendations be directed at first only to the most outstanding needs, it should have a heartening influence on those who are wearied of academic discussions and long for evidence of definitely constructive progress.

THE PUBLIC HEALTH PROBLEM OF SPIROCHETAL JAUNDICE (WEIL'S DISEASE) IN AMERICAN CITIES

SPIROCHETAL jaundice is receiving more than occasional notice in the scientific literature. Its importance as a public health problem in American cities has heretofore been either disregarded or overlooked. The chief vector is apparently the rat, and this animal seems fated to continue to spread its potent shadow over the transmission of disease to human beings.

In a recent discussion of the paper of Dyer on typhus and its proved dissemination by the flea of the rat, at the meeting of the American Medical Association, Atlantic City, June, 1937, the Health Director of San Francisco pointed out that the rat must be reckoned with likewise in Weil's disease. For instance, in late 1935, 2 men working as cribbers in the city sewers became ill and their disease was subsequently diagnosed as spirochetal jaundice. The clinical diagnosis was confirmed in the laboratories of the George Williams Hooper Foundation for Medical Research of the University of California.

In 1931, the organism *Leptospira icterohaemorrhagiae* was reported in the kidneys of rats in San Francisco by Ridlon [1] of the U. S. Public Health Service. The cases in human beings reported in 1935 marked the presence of the disease in the official reports of San Francisco for the first time. In March, 1937, however, there were reported in rapid succession 4 cases entirely unrelated to each other and in different localities, the clinical diagnosis being confirmed by laboratory examination. An examination by the George William Hooper Foundation of rats caught in the vicinity of one case indicated approximately 33 per cent infection with spirochetes.

The Health Director of San Francisco, in his discussion of epidemiological factors, pointed out that Weil's disease so far has not occurred in extensive epidemics, but that cases are occasionally met with, chiefly among males exposed to contamination by dirty surface waters or damp soils. Various workers have

shown that the disease may also occur among fish workers, coal miners, and those in occupations in which there is close contact with material contaminated with the urine of rats.

One of the unknown factors, as far as transmission to human beings is concerned, is the dog. Another vehicle of infection to human beings may be water, either through the skin—particularly if broken—or through the nasal and buccal mucosae, or perhaps the conjunctivae or lacrimal canals.

It can be considered therefore that Weil's disease is usually dependent upon the spirochetal infection in rats; that it can become a definite industrial hazard, especially involving occupations such as work in sewers, with close contact with rats or their moist excreta. There is in this an additional incentive for more extensive rat control measures and there should be further extension of routine laboratory examination of rats to include the causative spirochetae of Weil's disease, especially in cities of the United States.

REFERENCE

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PREVENTING THE CARRYING OF DISEASE BY AIRPLANES

WE have called attention to the airplane with its tremendous speed as an agent for transmitting disease and to experiments in the carrying of mosquitoes, as well as the possibility of their biting at high altitudes. We have also published an article [1] on jungle yellow fever, which, theoretically at least, constitutes a menace to all countries which have close communication with those areas in which the disease is known to exist—now Brazil, Paraguay, Bolivia, Peru, Ecuador, Colombia, and Venezuela. These countries are in close touch with the United States through the airplane. So far the jungle type of yellow fever has not produced urban outbreaks except in a few instances in Brazil and one in Bolivia. However, the increase in the facilities of communication due to good automobile roads, new railroads, and especially airplane services, have caused international sanitarians anxiety and have led them to study carefully this situation.

The Pan American Airways System has been in touch with the Pan American Sanitary Bureau and has formulated certain plans and made certain agreements designed to protect countries in close communication with each other by airplanes.

Among these may be mentioned the vaccination against yellow fever of all flying personnel as rapidly as possible. This will be done at Rio de Janeiro, and, as long as available, at Cristobal, Canal Zone, and at Lima, Peru. The vaccination of flying personnel will also be carried out in Miami, Fla., from December 21, 1937, to March 21, 1938. A form, "Certificate of Origin of Passenger," will be furnished by all traffic offices and agencies to each passenger embarking at any point north of 30° south latitude, irrespective of the direction that his voyage may take.

Airplanes will be fumigated during the night with an efficient insecticide such as that, the formula of which has already been supplied by the U. S. Public Health Service.

REFERENCE

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DIPHTHERIA: IMMUNIZATION BY INTRANASAL INSTILLATION

IN contrast with the percutaneous method of Loewenstein, immunization against diphtheria by intranasal instillations has been advanced recently by Claus Jensen [1, 2] to afford only a secondary stimulus following a single subcutaneous injection of diphtheria toxoid. The toxoid used was a highly refined preparation combined with aluminium hydroxide and the initial subcutaneous injection, when given in doses of 1.0 to 1.5 c.c., equivalent to 35–50 flocculation units, stimulated antitoxin production in 96 to 98 per cent of cases. In children under 7 years, 82 per cent gave no reaction, 11 per cent a very slight local reaction, and 7 per cent a moderate to strong local reaction or fever. As would be expected, older children and adults gave somewhat more reaction.

From the single subcutaneous injection the degree and duration of immunity were not satisfactory to Jensen and he tried the effect of additional intranasal instillations. In rabbits, the intranasal method alone gave rather poor results but following a single subcutaneous injection, repeated intranasal instillations gave rise to a marked and lasting increase in antitoxin titer, even in those rabbits which otherwise responded poorly.

The combined method then was tried in groups of nurses and children in institutions and it was found that the added intranasal instillation produced a higher and more lasting increase in antitoxin titer. The combined method gave 0.1 unit or more of antitoxin in 96 per cent of cases when tested 6 weeks after the preliminary injection, and there was a still better response after another intranasal treatment a year later.

Jensen believes that the effectiveness of the method has been demonstrated, and it has been made obligatory for nurses in one of the large Danish hospitals. He believes also that the method is adaptable to general application both in schools and in the family. Instillations could be given by the child's mother after instruction, and under 2 or 3 years of age they could easily be given during sleep. He recommends in children under 6 years of age that nasal instillation should be repeated every year, in September. In these, and in older children previously immunized, immunity may be reinforced and prolonged by nasal instillations in the presence of an epidemic. In the presence of an epidemic, for those not immunized previously he recommends passive immunization and the use of the combined method simultaneously, the first intranasal treatment being given 2 weeks after the single subcutaneous injection. Over 15 years of age nasal immunization alone should suffice. No mention is made of the Schick test.

While we have not seen Jensen's original paper, the editorials cited indicate that his work was done carefully and based upon reasonable experimental data. The extent to which secondary stimulation following the use of a single dose of a satisfactory preparation of diphtheria toxoid is necessary for the control of diphtheria is an open question. It likely is necessary in order to maintain a high level of immunity in a population where the incidence of cases and carriers is quite low. In other communities, as perhaps in our southern states, such secondary stimulation probably is unnecessary.

The need for a continuation of the antitoxin titer at a comparatively high level has never been demonstrated, nor has the rapidity with which formerly Schick negative persons respond to natural stimuli been determined. Studies now in progress should throw some light upon these questions. In spite of some

individual adverse reports upon the 1 dose method of immunization so much in use in the United States, the entire trend with regard to diphtheria morbidity and mortality appears to be highly reassuring.

While the general application of Jensen's method would seem to be open to some question on the ground of practicability, our thanks are due him for pointing the way to a more effective control of diphtheria, and his results and ideas should be given careful consideration by public health workers.

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A MILK-BORNE EPIDEMIC AND ITS LESSON

WE are constantly reminded of the similarity existing between preventive medicine and religion. When things go well the conscience is apt to sleep; when they go badly and there is alarm we are apt to get good again. So it is in preventive medicine. It is especially noticeable in regard to vaccination against smallpox. It requires a good scare from time to time to wake us up and to prevent us from lapsing into a dangerous satisfaction over our accomplishments.

These thoughts have been brought to the fore by a masterly report.[1] In August, 1936, a serious outbreak of typhoid fever occurred in England, affecting Bournemouth, Poole, and Christchurch, with a combined population of approximately 200,000, which was increased during the holiday season by some 60,000, in addition to many who passed through the towns involved without becoming temporary residents.

There were a number of unusual features, and in spite of the very careful study made by Dr. Shaw, of the Ministry of Health, some points are not yet entirely clear. However, it may be stated positively that the outbreak was milk-borne. In July a few cases of what appeared to be food poisoning were seen, and in August other cases suggestive of food poisoning occurred, though only a few days sufficed to show that enteric fever was involved. The Ministry of Health was informed, and Dr. Vernon Shaw was sent to investigate. By August 22, it was clear that an outbreak of enteric fever, probably paratyphoid, existed and that it was due to the milk supply. The only common factor was the consumption of raw milk retailed by one distributor, and pasteurization, which began on August 22, was immediately successful in bringing the outbreak to an end. If anything else were needed to confirm the diagnosis this result would give it.

The investigation was puzzling and prolonged. It was concluded that the milk was infective for some 31 days preceding pasteurization. Approximately 718 persons, 518 of whom were residents and 200 visitors, contracted the disease, 31 cases being fatal.

Investigation showed that there were no persons employed in the distribution of the milk who were carriers or who could be suspected in any way of infecting the milk. This made it necessary to study some 37 farms at one of which 2 persons were found with enteric fever, but neither was the cause of the outbreak, although there is strong presumptive evidence that the milk produced at this farm was the source of the infection of the retailer's supply. There had been a fatal case of enteric fever in an adjoining house 2 years before. A neighboring stream from which the cows drank was polluted by the sewage from a house in which a carrier was living, and which was found to contain large numbers of

typhoid bacilli. How the infection was conveyed from the stream to the milk has not been determined. It is considered possible and even probable that the cows while wading acquired surface pollution of their legs and udders sufficient to infect the milk, although there was regular washing of the udders. Dr. Scott, of the Ministry of Health, makes a suggestion that is hard to accept, that possibly the cows ingested the sewage carrying typhoid bacilli which passed through the digestive tract and were finally discharged in sufficient doses to contaminate the milk. He regrets that this idea came too late for direct proof. If such a thing is possible we will have to revise some of our ideas. When the Ministry of Health of England and such careful observers as Dr. Shaw and his collaborators admit such a possibility it must be considered.

This outbreak has been discussed in several papers but the report from the Ministry of Health has only recently appeared. The modern practice in which large corporations supplant individual dealers makes the bulking of milk necessary, and this, in spite of many advantages, increases the number of persons exposed to any risk. In England there appears to be a lack of legislative power to guarantee safe and clean milk supplies and to insist on pasteurization. As far as the communities affected go, the most recent attempts by the local authorities to get legislative power have not succeeded.

We have often spoken of typhoid fever as a vanishing disease, and its marked decrease has evidently given a false sense of security. Only pasteurization of all market milk can avert such tragedies as the one under discussion. Indeed, typhoid fever is not the only thing that we must guard against by pasteurization. On June 28, 1937, the New York State Department of Health reported a milk-borne epidemic of scarlet fever which began on May 27, 1937, and ended June 4, with 11 cases, but fortunately with no fatalities.

One has but to watch the literature to find cause for insistence on pasteurization of all milk supplies in order to render them safe. A better method may be discovered in the future but so far none has been devised.

REFERENCE

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LETTER FROM GREAT BRITAIN

A SEASON OF INTERNATIONAL CONFERENCES

In general it is because there must, or there is hope that there may be, visitors in large numbers from every other country to some particular country, that excuse is provided for the holding of "international" (so-called) conferences on health or other such-like harmless matters. We, in this country, having a coronation, and these others in France having, in Paris, an exposition, there appeared to be adequate reasons for each of us to do something along international lines, and to set the representatives of the nations picking each others brains on this and that and these and those of medical and health practice. Beginning with an international kind of conference on tuberculosis—to which I think I have already referred—we here have gone on to a number of other things, yaws and cremation amongst them. In Paris they have been having meetings almost daily for months and the end does not seem to be yet, everybody in France, apparently, being engaged in trying to find some group of individuals it might be possible to get together for the purpose of discussing some subject in the intervals of visiting the exposition and such of the pavilions as happen to be completed. Conspicuous amongst international conferences held or to be held in Paris are those of the International Union of Local Authorities, on Housing and Town Planning, and of Public Health Medical Officers.

INTERNATIONAL UNION OF LOCAL AUTHORITIES CONFERENCE IN PARIS

The conference of the International Union of Local Authorities is an annual affair, the meeting place being commonly, though not invariably, the capital city of one or other of the countries adherent to the Union. The reason for the choice of Paris on this occasion is obvious. That similar reasons may continue to operate and determine that New York in 1939 shall be the meeting place is a hope that I nourish. The wish is, of course, father to that hope but, after all, not without reason, since the permanent bureau of the Union includes a number of American representatives, several of whom, amongst them Mr. Hoan, Mayor of Milwaukee, and Mr. Ham, Executive Director of the American Municipal Association, attended the Paris Conference, while others submitted reports on one or other of the subjects chosen for discussion—"Atmospheric Contamination in Urban Areas," and "Regulation and Control of the Urban Milk Supply." At the opening meeting of the conference which was held jointly with that of the Housing and Town Planning Congress, there was a very large attendance, and though the bulk of the speeches were delivered in French, we others who have English as a tongue, like the charming old lady from Florida (who flattered me by saying how nice it was to hear English spoken) and myself, or know only German, were able to listen in to a running interpretation of the speakers' remarks by plugging in to the back of the seat in front.

MEETING THE LANGUAGE DIFFICULTY

At the ordinary conference meetings, interpretation was in the hands of the Secretary General of the Union,

Senator Vinck of Belgium, who is possessed not only of a gift of tongues but of an extraordinary ability to summarize in his translation from one language to another the words of a speaker as well as the sense in which he used them. With English this is not any too easy, and as the majority of the speakers—being either American or English—used that language, M. Vinck had quite a task to perform. Difficult as it was, however, it appeared less hopeless than that of the speakers who tried to convince certain delegates from continental countries that pasteurization as applied to milk was not an entirely undesirable process, and that even supposing the problem of atmospheric pollution could be solved by placing a bend (a "soot-trap" so-called) on every domestic and other chimney, it was going to take time. In the discussion on this latter subject quite a good deal was heard of the methods practised and researches carried out in Pittsburgh, the informant being a Polish delegate who had spent some time in that city.

Discussing the milk question, the Mayor of Milwaukee gave a description of the investigations recently carried out into the possibilities and advantages of municipalization of the milk supply, and succeeded in stirring up a good deal of controversy as a result. The conference meetings, though fairly well attended, suffered considerably in this connection from being held at the same time and in the same building—the Maison de la Chimie—as those of the Congress on Housing and Town Planning. Also when it came to functions, like receptions and banquets, or visits to places of interest—garden cities, like Plessis-Robinson or Chatenay, to Suresne to see the very striking open-air school, or to the Beaujon Hospital—so very American in its arrangements—the International Union of Local Authorities delegates found themselves rather elbowed aside by those attending the Housing Congress. Though labelled, like the conference, "International," I failed to find amongst the congress reports any from America. Even Sir Raymond Unwin, the general reporter, who only a short time previously had read a paper in London in which he compared English and American practice in relation to Housing and Town Planning and revealed himself as well acquainted with the situation in the United States, in Paris dealt exclusively with European methods and the difficulties that the people in countries on this side had to contend with.

INTERNATIONAL CONFERENCE OF PUBLIC HEALTH MEDICAL OFFICERS

The originator of the idea of an international conference of Public Health Medical Officers was, I believe, Prof. Parisot, Director of the Institute of Hygiene of Nancy. As a result of his efforts, and with a backing from the French Ministry of Health and the League of Nations (through Dr. Rajchmann who was present), a meeting of what was called the International Organization Committee was held in Paris to discuss the question of program dates suitable for the congress, and so on. As the preliminary meeting was held on the 11th May, the day before that fixed for the Coronation of King George VI, it is not surprising that British Medical Officers of Health were not represented. A number of representatives from other countries did attend, however, including one from the United States (Dr. Strode). Naturally, France was extremely well represented, and importance was added to the occasion by the presence in the chair of Dr. Hazemann of the French Ministry with messages from the Minister himself. In spite of the fact that the program drafted for the congress is quite attractive, dealing as

it does with matters affecting health officers personally as regards their training and status, it is unlikely that British health officers will be present in any numbers. The main reason for this is that the dates chosen are at a time—towards the end of October—when the "recess" having ended, local health authorities and their officers are getting into their stride once more and are busily engaged on the autumn and winter campaign. Amongst individuals nominated to act as reporters to the Congress I may say are included Prof. Jameson of Great Britain and Dr. Strode of the United States. Professor Parisot is to be President, and Dr. Leclainche of the French Ministry of Health, Secretary.

THE ROYAL SANITARY INSTITUTE HEALTH CONGRESS

Although not described as "International" none of those to which I have referred more fully earned that title than the Congress of the Royal Sanitary Institute. Held at Birmingham, July 12th to 17th, this congress though ostensibly like the Institute itself, British, attracted, as it does invariably, many others than representatives from Great Britain and the Dominions and Colonies. Amongst these others it was pleasant to find several from the United States; Dr. Robert H. Riley of Maryland—making a very welcome return visit—representing the American Public Health Association and the Conference of State and Provincial Health Authorities of North America, and Dr. Allen Freeman—another old friend—delegate of Johns Hopkins University, with, in addition, Drs. Griewe, Hiller, and Benjamin, present on behalf of Cincinnati. Other countries represented were Germany, Italy, Guatemala, Iran, Roumania, China, and a number of others. To welcome these visitors it is usual for the Institute to hold an "Overseas Luncheon." On this occasion this practice was followed and a number of the guests were good enough to address the gathering. It had been intended that the principal speaker should be Dr. Freeman but, unfortunately, on account of illness, he was unable to be present. Dr. Riley, however, deputised most acceptably for him, recounting a number of fantastic adventures in which your correspondent, at his last very happy visit to America, is supposed to have been involved. The success which attended this function was shared by all the others of the congress week. The meetings for discussion were extremely well attended—as they might well be since the numbers present exceeded 1,800—and much very useful work was done. The Minister of Health, Sir Kingsley Wood, delivered an address, announcing the opening of a health propaganda campaign in the autumn, in which all health authorities would take part, and expressed gratitude to the Royal Sanitary Institute for services rendered on behalf of the public health. The congress of 1938, it was announced, would be held in Portsmouth.

CHARLES PORTER, M.D.

11th August, 1937

PUBLIC HEALTH EDUCATION*

"I Don't Agree With Your Comment"—Or, "I don't like what you said about . . .," or something similar, should open many letters addressed to the editor of this department. Such letters would be good for the editor, and readers would delight in them.

Sometimes there could be letters saying: "I like what you said about . . . because . . ." Be very sure to include a "because."

How Do You Pick Your Topics?—What rules, principles, or policies guide the selection of subject matter for radio talks or press releases?

How is a decision arrived at, and who does the choosing?

Please contribute a paragraph or two for a symposium on the subject, and thus help in gathering information which should be of value to many.

Welcome to the Fraternity!—To Adele E. Yoe, Louisville, Dept. of Health; Milvin Price Isaminger, Dist. of Columbia Health Dept.; Daniel C. McCarthy, National Tuberculosis Assn.; and all of the others who have joined the ranks of health educators in the past year, a cordial welcome and hearty congratulations.

The men and women who came in ahead of you are well worth knowing, and there is no finer work in the world to be done.

We hope that you will come half way by attending the annual meeting of the Section, and participating in this *Journal* department.

The Beginnings Were in New York City—In the early spring before the 1921 Annual Meeting in New York the suggestion was submitted to the Executive Secretary that time be given to health education. The Executive Secretary said "yes," and asked that a program be arranged. Thus in October two half day sessions were held in a ball room of Hotel Astor.

The attendance and the interest warranted the next step, the election of officers for a provisional section. Unfortunately the elected chairman went for a long stay in Europe, but in his absence a program was completed for sessions at the Cleveland meeting.

There the new section conducted its first clinic. After several reasonably successful annual programs the section was officially accepted as a permanent feature of the A.P.H.A.—and now we return to New York City with a record of honorable achievement.

May the second New York gathering give new impetus to this coöperative service in health education.

A Possibility in Coöperation—An example of the possibilities which beckon in many directions:

Radio playwriting among 4-H Club members in Oregon seems to illustrate one of many diverse channels to be utilized by alert and imaginative health educators. Naturally 4-H Club members and other groups are interested in considering material which might be suitable for the medium in which they are working.

"Mark Time" as a Teacher—Of all the characters created to talk health, "Mark Time" of the New Jersey *Public Health News* (Trenton) seems the nearest to a real human

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N.Y.

being in his shrewd analysis and homely discussion of local health problems. Of course Mark could not function without his pal, "Ben Hustler," garage man, as a foil.

In the August, 1937, issue, Mark and Ben are discussing a disastrous Sunday School picnic. Ben says:

"I suppose they've put up a sign to warn people not to drink there any more."

"Yes, but—shucks!—you can't put signs on every pipe, brook or spring in the state. Folks ought to know by this time that they are all risky."

"Maybe they put too much trust in the Lord," suggested Ben, with a whimsical smile.

"Well, now, it's all right to put trust in the Lord for what you can't help and maybe He can, but as for drinking water from a pipe or spring or any other place we know nothing about, I reckon He expects us to use our own brains and decide to leave it alone."

A Radio Anniversary in New York—As reported in *Health News*, New York State Dept. of Health:

The department's radio players, the Health Hunters, celebrated the completion of their fourth consecutive year on the air with a special broadcast from Station WGY on Wednesday, August 11, at the regular hour, 2:15 p.m.

Initiated in March, 1922, shortly after station WGY was established, the department's radio health program has been on the air continuously for the past 15 years with the exception of a few interruptions occasioned by special broadcasts. For the first 11 years, it consisted of a series of weekly 5 minute health talks which were superseded in August, 1933, by the present 15 minute Health Hunters plays.

So far as known, the department broadcast is the oldest continuous program on the air today and is the only one of the original WGY presentations still on its regular weekly schedule.

In State and Local Department Bulletins—Here is what a few recent issues carried:

The first half of 1937 (Stockton, Calif.) . . . Anemia or lack of good blood (Oregon) . . . A study of type II pneumococcal pneumonia (Rochester) . . . Rabies and black widow spiders (Pasadena) . . . Activities for the fiscal year (Bakersfield, Calif.) . . . Whooping cough (San Jose, Calif.) . . . Changing public health practices and problems (New York State) . . . Eradication of syphilis (San Luis Obispo, Calif.) . . . An outbreak of milk-borne scarlet fever; syphilis yesterday and today (Michigan) . . . The city health, Jan.–June (Baltimore) . . . Vital statistics for 1936 (Kentucky) . . . The health officer and the venereal disease control program (Lincoln) . . . Vacation warnings (Albany) . . . Not a diphtheria death for 28 months (Salt Lake City) . . . A new and potent test for milk pasteurization (Westchester) . . . Diarrhea and enteritis under 2 years of age (Ohio) . . . Extermination of rats (Colorado Springs).

The above does not represent all of the topics, especially in the case of the larger state bulletins.

Mass Distribution of Health Information—How to reach a considerable group of people who may or may not be reached otherwise is reported in *Bulletin*, National Tuberculosis Assn., 50 W. 50th St., New York, N. Y., Aug., 1937.

The Tuberculosis Society of St. Louis has been using metal racks hung in public buildings.

Since this project was inaugurated in 1935, approximately 140,000 pieces of literature have been distributed through the 25 racks now located in the St. Louis area.

They find that pay envelopes are also proving a satisfactory means for distributing health literature. Each month over 14,000 folders are provided to 91 industrial and business firms for pay envelope stuffing. Frequent requests by companies for changes in the number of folders to meet pay roll fluctuations have proved that the organizations are actually using this material.

Cancer Education in New York State—The State Institute for the Study of Malignant Diseases reports:

During 1936, the Division of Cancer Control under which the work of the institute is administered has emphasized lay education in cancer control, especially in the rural districts. Illuminated transparent photographs

of precancerous and early cancerous conditions, together with models illustrating the various methods of treating the disease, have been shown and lectures given at meetings of farm organizations, county fairs, and before other groups in small communities. Similiar talks and exhibits have been given for civic, women's and church clubs.

A particularly interesting new feature of the division's educational program last year was the presentation of cancer talks before high school students. Experience has shown that young people of high school age are intensely interested in cancer, and since they are observant and should be able to detect possible precancerous lesions in their parents, it is believed that these students are an effective medium through which to spread knowledge about cancer.

Educational activities among the medical, dental, and nursing professions have also been intensified and extended. Two courses covering the entire cancer problem were given for physicians, one in conjunction with the Erie County Medical Society and one in conjunction with the Monroe County Medical Society. Lectures illustrated by lantern slides and in some cases by actual specimens were given by members of the division's staff. Exhibits including transparencies, wax models, pathological specimens, and apparatus for the radiation treatment of disease were presented at meetings of the State Medical and State Dental Societies as well as at regional meetings of the medical profession.

WANTED

Wanted: information about ready-made *lantern slides for popular audiences.* Will national agencies and other organizations please tell about any slides available by loan, rental, or purchase for use in other cities and states? Please address the editor of this department.

Wanted: information about *exhibits* which will be loaned or rented outside the state of origin. Address the editor of this department.

The above information is for compilation of lists for the use of health workers. Any one who has a clue to *slides* or *exhibits* is urged to let us hear about it.

Wanted: dialogues or dramatizations for broadcasting. Address: Dr. John L. Lavan, Health Officer, Grand Rapids, Mich.

Wanted: addresses of makers of *mechanical and electrical devices* for use in making up health exhibits. Address: Walter Peiris, Pioneer Maternity and Child Welfare Exhibitors, Sans Souci, Moratuwa, Ceylon.

Wanted: printed matter on health topics, and *lists of publications* for sale which might be used by a high school teacher. Address: Nancy M. Miner, 1409 Channing Way, Berkeley, Calif.

BULLETINS OR HOUSE ORGANS

The mailing list for the *Bulletin* of the Kentucky Dept. of Health includes: physicians, ministers, school teachers, members of women's clubs, local registrars of vital statistics, undertakers, Y.M.C.A. workers, state and county officials, members of the legislature, and every newspaper in the state.

Monthly Bulletin, Dept. of Public Health and Sanitation, Colorado Springs, Colo., is an example of the statistical type of bulletin. However, the second page is used for educational material. Would it not be better to run the educational material on the first page, moving the report of the Bureau of Communicable Diseases to the second page?

"Motherhood in Bondage" is the theme of *Birmingham's Health,* Jefferson Co. Board of Health, Birmingham, Ala. (Aug., 1937). The issue reports on a study of maternal deaths. A series of pictorial diagrams add effectiveness to the report.

"Summer is Now Safest for Babies" is a simple diagram in *Public Health News,* State Dept. of Health, Trenton, N. J. Aug., 1937. It shows "comparative infant death rates by months of year," with horizontal lines for 1916 and for "today." August, 1916, is the peak, with August as the low point in 1937.

"Why Register Births and Deaths" is a half page summary in *Bulletin*, State Dept. of Health, Louisville, Ky., June, 1937. The reasons are listed under these sub-headings: to prove the fact of birth . . . date of birth . . . place of birth . . . fact of death . . . facts about deceased, to furnish birth statistics, to furnish official statistics for health departments . . . for life insurance . . . for mortality statistics . . . for estimating population. The details of the summary supply usable material for a good newspaper feature writer.

MAGAZINE ARTICLES

"Hazards of Life." Editorial. Neither job nor sport need be given up to avoid accidental injury. *Collier's*. Aug. 31, 1937.

"Health Without Wealth," by D. Pearson. Examples of successful co-operative financing of medical services. *Common Sense*, 315–4th Ave., New York, N. Y. Sept., 1937. *25 cents*.

"Make them Walk," by S. Woodward. *This Week*, the Sunday newspaper magazine section. Aug. 8, 1937. "See that your youngsters use their legs instead of the family car." How children are being made "soft"; how college football teams and other groups of winning athletes largely come from those who must walk.

"This Priest Sacrificed His Life for Lepers" (3 picture pages about Father Damien); "The Story of the Iron Lung"; "Are You an Ozzie?" (a character who caricatures "the kind of driver involved in most fatal accidents"). *Look*, Des Moines, Ia., Aug. 31, 1937. *10 cents*.

"What Goes Up—" by P. W. Keansey. *American Magazine*, 250 Park Ave., New York, N. Y. Sept., 1937. Accidents via dust and gas explosions in homes and elsewhere.

"Women and Athletics" (sports good, sports bad, and why), 6 pages; a page in the life of "Ozzie," the accident-causing auto driver. *Look*, Des Moines, Ia., Sept. 14, 1937. *10 cents*.

FOR EDUCATION OR REFERENCE

"Developing a Housing Program in a Southern City," by Graves and Fletcher. Reprint. *Free* from Health Dept., Memphis, Tenn.

"Institutional Mortality With Reference to Residence Allocation," by E. Parkhurst. *Reprint*. State Dept. of Health, Albany, N. Y.

"Is Some One Sick in Your Home?" is an 8 page (5¼ x 7¾ inch page) booklet; large type, well leaded; 6 simple sketches. Tells how to protect others from infection by the patient. State Dept. of Health, Albany, N. Y.

"What Happens to the Cancer Patient in Connecticut," two mimeographed pages, seems to be an especially useful statement for popular use. John Doe has a little spot where his glasses touched his nose. The simple recital of what Doe did and the steps taken by his physician and other physicians, and the successful outcome, should be reassuring to many. State Dept. of Health, Hartford, Conn.

"Accidents and Opportunity." Accident Prevention Conference, Dept. of Commerce, Washington, D. C. Place and cause of accidents. 14 pages. *Free*.

"Mad Dog!" (telling a child how rabies may be controlled); "The Introduction of Bacteriology Into the Service of Public Health in Chicago." Reprints. Address the author: Dr. F. O. Tonney, 55 E. Washington St., Chicago, Ill. *Free*.

"Studies of Community Planning in Terms of the Span of Life," by C. F. Lansing. New York City Housing Authority, 10 E. 40th St., New York, N. Y. With picture diagrams; illustrated by recent housing developments.

If you have overlooked "This Business of 'Keeping Informed'" you

will want to ask for a copy. Issued by the American Public Health Assn., it tells about the New York meeting, and why health workers will attend. It's good stuff to use in getting fellow workers to attend the next annual meeting. Anyway, every one who fails to attend a public health convention should be influenced by page one of the folder.

Also there is "A Pound of Feathers or a Pound of Lead," a little booklet which classifies advertisers and tells why they advertise in the *Journal*. Something for the reader who wishes to boost the *Journal*.

Children's Bureau, Washington, D. C.:

"Infant and Maternal Mortality Among Negroes," by E. C. Tandy. Reprint.

"The Health Education Program of the Children's Bureau, With Particular Reference to Negroes," by K. F. Lenroot. Reprint.

"The Causes of Stillbirths," by Dunham and Tandy. Reprint.

From American Medical Assn., 535 N. Dearborn St., Chicago, Ill.:

"Cattle's Contribution to Mankind," by J. A. Myers. Reprint. *10 cents.*

"Measles," by E. B. Perry. Revised reprint. *10 cents.*

"Scarlet Fever," by E. B. Perry. Revised reprint. *10 cents.*

Reprints from *Public Health Nursing*, 50 W. 50th St., New York, N. Y. (*10 cents each*):

"Salaries of Public Health Nurses in 1937," by A. J. Miller.

"Impediments to Maternal Health," by Dr. Thomas Parran, Jr.

"Forms for Reporting School Health Service," by A. J. Miller.

"Health Teaching in a Secondary School," by M. E. Bowen.

"The Past Challenges the Future," by E. G. Fox.

"A Tribute to the Public Health Nurse," by Dr. Livingston Farrand.

DATES AHEAD

From George A. Dundon, Milwaukee Health Department:

Regarding Dr. E. O. Chimene's quest for a calender of notable days, weeks, or events for use in a radio series, as noted in the June *American Journal of Public Health*, we suggest Mary Emogene Hazeltine's 300 page book "Anniversaries and Holidays," published by the American Library Association, Chicago, Ill. Doctor Chimene may find helpful especially the classified index of medical scientists, including physicians, surgeons, anatomists, physiologists, and workers for public health; bacteriologists, botanists, chemists, physicists.

MATTERS OF TECHNIC

If a camera is being considered by the health department, or health association, especially if a miniature or "candid" is being discussed, it may help a lot to look up "Crafty Americans," by C. Norcross. In *Colliers*, for July 10, 1937. See page 58 for the camera data.

If you consider using billboard space along highways you may well look over *Roadside Bulletin*, National Roadside Council, 119 E. 19th St., New York City. *10 cents.*

"Teaching About Tuberculosis by Isotype," by Otto Neurath. *Bulletin*, National Tuberculosis Assn., 50 W. 50th St., New York, N. Y. April, 1937. Here is Dr. Neurath's own interpretation of the educational significance of the pictured statistics with which his name is associated.

BOOKS AND REPORTS

Shadow on the Land—"Syphilis"—*By Thomas Parran, M.D., Surgeon General of the United States Public Health Service. New York: Reynal & Hitchcock,* 1937. 309 pp. Price, $2.50.

At a time when there is an awakening of interest and activity in syphilis and its control in this country comes Dr. Parran's new book—*Shadow on the Land*—to clarify our thinking, to guide our endeavors and to fortify our enthusiasm in the attack.

As one reads this comprehensive but simple book one gets the feeling that a master-hand is leading one through the intricacies of syphilis, weighing and measuring the many problems in a clear-cut authoritative fashion, sifting the important facts from the vast amount of data accumulated. Dr. Parran does not hedge on the many vital questions involved in the problem, whether it be the part that organized medicine should play or the control of prostitution. He frankly and simply gives his opinions and answers. His conclusions are unbiased and based on careful and thoughtful personal study of a problem in which he has long had an intense interest and concern.

Shadow on the Land is written in a style that is easy to read, and the occasional personal references give it a touch of delightful intimacy with the author. The book should be read and studied by every health officer. Every physician should be familiar with its content. Health and social workers will find in it many guiding principles. Equally important, the general public and governmental officials, who are interested in personal and community advance, will find in this volume help for better living and economy in government.

The outstanding thesis of Dr. Parran's book is that syphilis is one of our greatest and most devastating public health and medical problems. Syphilis is a communicable disease that can be brought under control in a generation if necessary funds are made available and if our present knowledge of this disease is applied enthusiastically by government, medicine, public health, and the general public.

In this book Surgeon General Parran has not only defined the pathway toward syphilis control but has brought out effectively and forcefully the importance and the place of public health in our national life. JOHN L. RICE

Who Gave the World Syphilis? The Haitian Myth—*By Richmond C. Holcomb, Captain, Medical Corps, U. S. Navy, retired. New York: Froben Press.* 190 pp. Price, $3.00.

It is well known even to the casual reader of medical literature that there is a large body of opinion, embracing medical historians on both sides of the Atlantic, which holds that syphilis is a disease wholly of American origin, and was imported into Europe with Columbus upon his return from his first voyage. In this volume, Holcomb reviews the chief source material upon which this opinion is based, and finds clear evidence that the disease was widespread over Europe and the Near East before Columbus returned from

his second voyage in 1496. In fact, he finds reason for believing that the disease was recognized by the Greeks, Romans, and Arabs in very early periods.

Inasmuch as Ruiz Diaz de Isla (1462–1542?) is considered the most convincing authority supporting the Haitian origin of syphilis, Holcomb's study deals principally with de Isla's book, first printed in 1539.

It appears that de Isla, having no first-hand knowledge of Hispaniola, derived his information from the works of Oviedo, Las Casas, Gomaro, Herrera, and others, all of whom extolled the virtues of the Holy Wood (guaiac) in the treatment of the "new" disease; and that de Isla accepted this alleged efficacy of guaiac as proving the place of origin of syphilis, his argument being that God always provides a remedy for a disease at the place where that disease was inflicted as a punishment for sin.

However, de Isla, having thus asserted a Haitian origin, proceeds to give a contrary account, clearly stating that the "new" disease was identical with that described by Pliny as having been introduced into Rome in the time of Pompey.

From such textual criticism, Holcomb goes on to examine contemporary writings, edicts, chronicles, and other source material for the light they throw on the question; and then to review at length the humoral philosophy current in the 16th Century with reference to its influence in determining views regarding the nature and origin of syphilis.

There follow a concise summary of de Isla's work, and finally brief comments embodying the conclusions emanating from this particular study. It will suffice here to say that Holcomb believes the work of de Isla to be of no value in proving a Haitian or American origin for European syphilis.

The substance of the study in so far as apposite to the title may be found in the final section "Some Comments"; but those who read the book leisurely for its intrinsic value will be well repaid. Hence, the book may be read for the evidence it presents regarding the geographical distribution of syphilis within the historical period, or for enjoyment. It is to be recommended for either purpose.

H. W. SMITH

Principles of Bacteriology and Immunity—*By W. W. C. Topley and G. S. Wilson. (2nd ed.) Baltimore: Wood,* 1936. 1645 pp. including index. Price, $12.00.

The first edition of this book gained almost immediate popularity and has been widely used both as a text and as a reference. The second edition consists of a single volume instead of two, which we regard as an improvement.

The preface points out the difficulties encountered by the authors. The advance in bacteriological knowledge has been so great that adequate reference to all new work would lead to an expansion impossible in a work of this kind. Selection has therefore been pushed far but we believe with good judgment. The new edition has stressed the work which bears on diagnosis, prevention, and treatment of infectious disease. In order to compensate for the necessary additions some omissions have been made, chiefly concerning observations the value of which cannot at present be assessed. Where long-standing problems have been solved historical data have been cut down.

As in the first edition the infectious diseases of animals, especially those which are transmissible to man, have been treated more fully than is usual in a textbook. The authors properly point out that the boundary between medical and veterinary science has be-

come very indistinct and the importance of animal diseases to public health is such that both physicians and veterinarians should know the bacteriology of both.

The use of this book for teaching purposes has led the reviewer to believe that the objectives announced have been well carried out. There are some omissions which are not serious. The authors recognize the menace of bovine tuberculosis to human beings. It is perhaps natural that in view of the extensive and accurate studies made in England they should refer chiefly to English sources, but it would be only fair to recognize that at the Congress on Tuberculosis in 1901 it was an American who was called on by the authorities to combat the errors of Robert Koch, and who had the only evidence at hand to correct what the authors call the "quite inadequate experimentation" on which Koch based his statements. American work gave the first positive proof of the danger of bovine tuberculosis to human beings but is referred to only casually, and not mentioned in the index, while the work of the Royal Commission on Tuberculosis is given first place. This is neither fair nor accurate historically, and is the less excusable since the Congress at which Koch made his blunders and which were combated immediately by an American took place in London.

The book is well printed and unusually free from errors. The index is good. The illustrations are of the average type. The book can be recommended both as a text and as a reference, though rather large and heavy for the average medical student.

MAZÝCK P. RAVENEL

Group Leadership—*By Robert D. Leigh. New York: Norton,* 1936. 259 pp. Price, $2.50.

Modern society finds it increasingly desirable to work in groups. This book is a valuable contribution to the growing volume of literature which attempts to facilitate such group work. It is intended for those who may find themselves called upon to preside before large or small gatherings, as well as that larger number of people who participate in the deliberations of such gatherings.

For many years rules of procedure devised for parliamentary debate have served poorly to direct the deliberations of non-parliamentary bodies. President Leigh renders a great service by describing modern rules of procedure which provide for the orderly dispatch of business in those non-parliamentary groups with which most of us more frequently come into contact. Health officers, public health nurses, engineers, and public health workers generally will find this a most useful guide for their participation in department conferences, committee meetings, the sessions of professional and scientific meetings, and wherever a group meets jointly to consider a common problem. One wishes that college presidents might more often, as President Leigh has done, address themselves to the task of aiding the average individual in his everyday problems.

HOMER N. CALVER

Municipal and Rural Sanitation—*By Ehlers and Steel. (2nd ed.) New York: McGraw-Hill,* 1937. 477 pp. Price, $4.00.

Advances in the field of sanitation in the past decade made a revision of the original edition of this book advisable. Many chapters have been brought up to date and much new material added, particularly with reference to milk control, plumbing, industrial hygiene, and noise abatement. Other changes and additions throughout the book will undoubtedly improve its usefulness.

The book is an effort on the part of the authors to place in a convenient form the minimum of practical information relating to the principles of sanitation. While no attempt is made to cover in detail the vast amount of subject matter, the book very well covers the principles of sanitation and practical applications for solving the numerous problems confronting the sanitarian. For those readers who desire further information along particular lines a selected bibliography will be found at the end of each chapter dealing with the subject.

While the book takes up a multitude of items, the material is presented in a language understandable to the lay person as well as to the health officer and sanitary engineer. Because of this feature, it is felt that the book should serve a very useful purpose. Many persons engaged in both municipal and rural health service have not had the advantages of specialized training in sanitation. Much of the knowledge of sanitation possessed by these people has been the result of experience and observation and their judgment may often be unreliable. This is equally true of many city engineers, city managers, and other public officials. The authors, from their fund of practical experience, apparently had this in mind and have prepared the book to serve as a reference work of the fundamentals of sanitation for those who are called upon to deal with problems requiring a knowledge of sanitation.

It is also felt the book should serve as a most practical textbook in the courses for sanitarians now being conducted in various schools as well as at field training stations for public health workers being established in many states.

H. A. KROEZE

Public Works Engineers' Yearbook, 1937—*Chicago: American Public Works Association,* 1937. 282 pp.

This, the Seventeenth Annual Proceedings of the International Association of Public Works Officials and the Forty-Second Annual Proceedings of the American Society of Municipal Engineers, contains several articles of interest to public health officials; primarily engineers. Sewerage, sewage disposal, refuse collection and disposal, housing, and water supply matters are briefly touched upon by different authors.

ARTHUR P. MILLER

Food Technology—*By Samuel C. Prescott, Sc.D., and Bernard E. Proctor, Ph.D. New York: McGraw-Hill,* 1937. 630 pp. Price, $5.00.

The recent development of the new science of nutrition has been paralleled by the organization of a vast food industry. This essential industry has mobilized all branches of science for practical application to the many problems of production, conservation, and distribution of the quality foodstuffs comprising the modern varied diet.

This impressive book is designed to aid in training the scientific personnel now required in the food industry. For this purpose, as well as for reference by food manufacturers, nutritionists, and others concerned with the biology, chemistry, physics, and engineering of food preparation, preservation, and sanitation, it should be eminently satisfactory, since it is comprehensive, authoritative, and readable.

Included in the well printed text are chapters on cereals, fruits, vegetables, meats, fish, dairy products, and sugars, and on baking, canning, refrigeration, dehydration, and on various prepared commodities, such as condiments, jellies, confectionery, etc. The book is well documented and has a good index.

There has long been a need for a manual of food technology of this nature, which in this instance is an

outgrowth of the noteworthy courses presented for a number of years at the Massachusetts Institute of Technology. The book should be of distinct value to sanitarians and other scientists who are concerned in any way with the production and control of quality foods.

JAMES A. TOBEY

How to Interpret Social Work—*By Helen Cody Baker and Mary Swain Routzahn. New York: Russell Sage Foundation,* 1937. 79 pp. Price, $1.00.

This volume is a practical, loose-leaf course of study representing the ABC's of interpretation. While designed primarily for social workers to aid them in conveying their message through the spoken word, the written word, and visual methods, as well as in planning their programs, the volume will be also helpful to health workers. Many effective illustrations are given, several being drawn from the health field.

In the use of this course, it is contemplated that local leadership will be provided to groups interested in informal study. Specialists in various technics covered in the lessons may be helpful as consultants, but an ability on the part of the leader to stimulate discussion and hold it to the matter in hand is considered of first importance. Here is a useful instrument for the stimulation of group thinking and community planning of publicity programs.

IRA V. HISCOCK

The Anatomy of Personality—*By Clements C. Fry and Howard W. Haggard. New York: Harper,* 1936. 357 pp. Price, $2.00.

This important contribution to medical and psychiatric thinking is a timely reminder of the influence of the early Greeks who placed pertinent significance upon various types of body builds, plus Versalian emphasis upon anatomy as a basis for the understanding of variations in health and disease.

The authors attempt to summarize the essentials of structural analysis of personality in order that the reader may obtain further insight into his own personality, but also insight into the behavior tendencies of others.

An eclectic approach is espoused although due credit is given to the "masters": Freud, Jung, Adler, Kretschmer, Meyer, Schneider, Kahn, and others. The presentation emanates from the study of psychopathic personalities, although the authors' interest is not essentially with the abnormal. It is well emphasized that the normal man varies only in degree, and not in kind, from the psychopathic. Their first consideration is for the normal man whom they describe as the average man—"one who is neither a misfit in the environment and society, nor yet equally abnormal, a genius. . . . Few men show personalities so neutral as to be free from all distinguishing peculiarities."

There are 8 chapters which concern themselves with The Manners of All Men, Realities That Lie in the Flesh, Freedom That Grows with the Mind, Bondage in Moods and Emotions, The Meek, the Mild, the Militant, and The Streams of Life. There are a number of well chosen illustrations emphasizing different body builds, particularly head and shoulder sketches.

Issue may be taken with the authors' concept of "character" in contrast to "personality." "Character is a product resulting from the action of the environment upon the personality." The adaptation of the personality, the conditioning of its inherent qualities, thus results in patterns of reactions and modes of behavior which in time become the character.

Human personality is analyzed into 5 basic elements: physical, impulse or driving force, intelligence, temperament, and ego. Each of these is elabo-

rated upon in succeeding chapters as they influence behavior.

The authors are to be commended for their scientific objectivity in presenting such complex facts and factors influencing personality functioning, especially in the light of our present-day limitations of knowledge. Although they note an association between physical and certain general tendencies of the personality, it is not an exact association, but rather points to the direction of certain traits of personality. The various personality traits usually found associated with different personality types, chiefly those described by Kretschmer, are succinctly delineated. Their variation from abnormal expression to the extent of psychopathological and mentally ill prototypes is clearly described. Wholesome caution is tactfully pointed out in order that the danger of drawing unwarranted conclusions may be avoided.

In the final paragraph the authors bring to the front in stimulating manner the importance of human impulses and drives which are metaphorically described as "the streams of life." Their influences in molding personality and character patterns are expanded. The effect of sublimation and suppression are noted, and emphasis is placed upon the significance of evaluation in achieving a well rounded and integrated personality.

A critical stocktaking of individual endowment and patterns of reactions to life experiences is urged in order that mechanisms of character formation may be recognized and applied in a melioristic manner. "It is this structure revelation of personality that has been the sole purpose of this book . . . no further is its scope." Every student interested in human biology will be refreshed by this lucidly written book which abounds in case references and illustrations to drive home its relativistic conceptions. The critically formulated content of this book will be stimulating to all those who seek a better understanding of personality functioning through espousing a more significant observation and evaluation with respect to physical-mental interrelationships. In this connection it is important that the integration concept be at all times kept in mind in order that the human being be not artificially departmentalized in a dualistic or even polymorphous manner, but rather seen functioning as a total unit at all times.

FREDERICK L. PATRY

Ten Million Americans Have It!—*By S. William Becker, M.D. Philadelphia: Lippincott,* 1937. 220 pp. Price, $1.35.

This book is an attempt to present the facts with regard to the public health control and clinical management of syphilis in such a way that it is understandable to the average individual. It describes briefly the history of the origin of syphilis. Of special interest are the chapters describing the course of the syphilitic infection and the modern methods of diagnosis and treatment. Syphilis as a public health and social problem is emphasized.

R. A. VONDERLEHR

Textbook of Applied Biochemistry for Pharmacists and Pharmaceutical Students—*By Frank Wokes. Baltimore: Wood,* 1937. 522 pp. Price, $5.00.

The title of this book may be misleading by not being sufficiently comprehensive. We have in this not merely a textbook for pharmacists and pharmacy students but for all persons interested in the newer developments of biology, pharmacology, and medicine. Where else may one turn to find in one volume a complete (to date) catalogue of the vitamins, including their occurrence, history, discovery, method

of preparing, of testing, of isolating or synthesizing the active agent as a pure chemical, of describing uses and applications in human nutrition, and all told in understandable words. Then too, the author describes methods of cooking to avoid losses of vitamins; artificial means of fortifying the vitamin content of foods and even of enhancing the vitamin content of milk and butter by way of improving the diet of cows.

In the chapter "Fats" the known fatty acids are listed and, where found, their chemical formulae and peculiar linkages and the ultimate fate of the fats we eat; also their relation to diabetes. Besides these facts the reader discovers that within the normal fat there occurs a complex alcohol cholesterol which now is found to be the base of certain vitamins and of the hormones, particularly those concerned in sexual activities.

The subject of hormones is treated at length and most interestingly to show their importance in regulating life processes—serving as chemical messengers by way of the blood stream to arouse certain organs or muscles into unusual activity and thus secure an immediate effect. This is illustrated, for example, by summarizing the therapeutic properties of adrenalin, the hormone derived from the adrenal gland—to arrest hemorrhage, localize anaesthetic action, relieve asthmatic attacks and restore heart action in anaphylaxis and shock from other causes.

The Chapter "Bacteria" includes a table of types with their outstanding characteristics; notes on variations in vitality, in staining, in resistance to bactericidal agents, in fermenting sugars; sub-divisions treating on sterilizing pharmaceutical preparations, on aseptic technic, on chemical methods of destroying bacteria experimentally and in practice, with critical comments on specific substances. With some of the statements the reviewer is not fully in accord but the effectiveness of a germicide depends on too many factors to suggest criticism.

The author makes no pretense of presenting new and unverified data; he acknowledges his indebtedness to many sources for the information, data, illustrations and figures reproduced. His own work, however, is not to be ignored.

The book is unusual in its comprehensive treatment, from every point of view, of the biological substances used in medicine. It is chemistry, biology, materia medica, physiology, and physical chemistry presented in a manner and wording alike interesting to the layman and to the scientist.

HERBERT C. HAMILTON

Bacteriology of Specific Communicable Diseases. Handbook of Public Health Bacteriology. *San Francisco, Calif.: Department of Public Health,* 1937. 141 pp. Price, $1.50.

We have received from the Department of Public Health, City and County of San Francisco, of which Dr. J. C. Geiger is the Director, this very cleverly gotten up handbook. It is designed to correlate the activities of a public health laboratory more closely with other branches of public health administration. The introduction warns us against the misuse of the laboratory through excessive routine without analysis; through improper specimens or improper handling of specimens; and through lack of data. Etiologic diagnosis is stressed though not at the expense of clinical diagnosis, and both are considered necessary for best results. It has been produced in recognition of a need for condensed general information usually available only from a number of sources covering medicine, field work, epidemiology, and laboratory technic.

The announced object of the book has been successfully accomplished. We regard it as one of the most practical guides that have come to our attention. Its value is increased by a good index. It is bound in loose leaf style and is a size to fit conveniently in the pocket of the field worker. We commend it to all those for whom it has been designed.

MAZŸCK P. RAVENEL

Safety Through the Year—An Activity-Text Workbook for Intermediate Grades—*By Florence Nelson and H. Louise Cottrell. New York: McGraw-Hill,* 1937. 96 pp. Price, $.52.

For the units, which cover the usual items in safety instruction, there is a short list of Questions for Discussion, questions to which the child writes the answer, and blank pages for pictures or short essays on various accident factors.

Several states now issue courses of study on accidents and their prevention. Definite reference to these would help the teacher.

CHARLES H. KEENE

Duties and Qualifications of Tuberculosis Executive Secretaries, Administrative Series No. 2—*By George J. Nelbach. New York: National Tuberculosis Association,* 1937. 32 pp.

This monograph outlines the duties of executive secretaries and prescribes the personal and educational requirements for the satisfactory fulfillment of the task. Standards are suggested for the selection and preparation of personnel, which are also appropriate for other types of health workers. Based on years of practical experience, the author has prepared an effective educational instrument for executive secretaries, a useful guide for boards of tuberculosis societies, and a helpful text for instructors of men and women in training for this type of work. The booklet is well printed; the material is organized in a logical manner, and is supplemented by a carefully selected bibliography. IRA V. HISCOCK

Butter and Oleomargarine: An Analysis of Competing Commodities—*By W. B. Pabst, Jr., New York: Columbia University Press,* 1937. 112 pp. Price, $1.50.

The approach to the subject is economic and statistical, and so provides a backbround which is possessed by few students of public health and nutritional problems. It is the opinion of the reviewer that this is the proper approach, for the reason that the controversies between the butter and oleomargarine industries are primarily economic.

Chapter I describes the development of the two industries and contains a summary of the number of establishments engaged in each industry, the value of the product per establishment, and the costs of labor and materials in the two industries.

Chapter II is a discussion of the Restraint of Competition Between Butter and Oleomargarine. Because of the inevitable handicaps of agriculture the federal government has adopted a policy of subsidies to this industry, and this is the basis of the controversy between the butter and oleomargarine industries. Numerous disputes and legislative acts were a consequence, and there is no prospect that these will diminish. This situation is further complicated by the importation of foreign oils and by inventions which make possible a wider use of domestic oils.

Chapter III evaluates butter and oleomargarine as competing commodities, and is of primary interest to students of marketing and statistics. Table 2 contains useful data on consumption and production of the two

products, and on their price relations.

Chapter IV considers the effects of future taxation of oleomargarine, and so of necessity enters a controversial field. A quotation on this point may be pertinent, p. 98:

> The possible effects of a tax on oleomargarine as judged from this theoretical summary are numerous in direction as well as wide in amplitude, for a tax may cause an increase or a decrease in its price. . . . It would be rare comedy mixed with some elements of poetic justice if a tax imposed on oleomargarine brought a decrease in the prices of both butter and oleomargarine as a result.

The author of the book makes a strong case for manufacturers of oleomargarine. The sympathies of the reader will be determined chiefly by his economic outlook. A. G. HOGAN

Handbook of Microscopical Technique—*By C. E. McClung. (2nd ed.) New York: Hoeber,* 1937. 698 pp. Price, $8.00.

From time to time a modification of one of the long established technical procedures employed in the study of cells and tissues is advanced in the hope that it will prove helpful to the plant and animal physiologist to explain some of the phenomena of cell activity. While these improvements in methods are commendable, indeed desirable, they tend to broaden the scope of microscopical technic so that the technologist is gradually being forced to confine his activities within a narrow field. Many of the newer technics introduced in recent years are of a highly specialized character. To learn to what extent specialization in technology has already advanced the reader need but refer to the recent volume on this subject edited by McClung and to study the list of the contributors.

Although the second edition of *Microscopical Technique* contains almost twice the number of pages of the first edition, this increase in size is not entirely due to the addition of new material, for only about 100 pages are devoted to a description of new methods. The remainder of the added pages were necessary because the type is larger. This improves the readability of the book—an improvement which is to be commended.

Of the new methods described, the outline of the new dioxan technic is very much worth while. It is an improvement of the long used procedure employed to prepare tissues for paraffin sectioning.

Another method for studying fixed cells is the microincineration method of determining the presence and, to a limited extent, the quantity of mineral elements. While this method will undoubtedly become very useful in the future, it is as yet very little developed. It is properly presented with the author's "realization that with few exceptions they (methods employed for handling tissues) fall short of the goal histochemistry should set for itself."

One description of the new procedure has vexed the reviewer because it appears to be merely an advertisement for a new instrument. The pages devoted to the description of the centrifuge microscopic method of studying cells might have more profitably—to the technician—been given up to a description of a good method of staining Negri bodies or even spirochetes in tissues. The writer of this chapter draws the reader's attention to "A more complete account of this instrument is given in an article entitled—'The Microscope-Centrifuge and Some of its Applications'"—and, "Complete directions for the use of the centrifuge microscope are supplied with each instrument." There is not even a reference to this description in the index.

On the whole, however, the present edition of "McClung" is greatly improved due to its more lucid descrip-

tions of the more widely used methods. As a reference book it should also prove of great value whenever the need arises to employ one of the special methods.

J. A. KASPER

Autopsy, Diagnosis and Technique—*By Otto Saphir. New York: Hoeber,* 1937. 342 pp. Price, $5.00.

The book as a whole is well prepared and will undoubtedly serve as a manual of brief descriptions for rapid reference. The paging given in the table of contents for tables and illustrations does not in all cases conform with the text. In one instance such descriptive terms as "firm" and of "fluctuant consistency" are applied to the same tumor. The use of vegetables to designate size, as "pea size," is not scientific. The tables supply ready help for brief features and differential points, but, as stated in the preface, are incomplete. We do not agree with the statements that the giant cell tumors of bone do not metastasize, and that basal-cell carcinomas occur particularly at mucocutaneous junctions about the mouth, nares, ears, etc.

While many of the illustrations are more or less duplicates or copies of those found in works on pathology, this is to be expected since the autopsy technic described has been essentially a standard procedure for many years.

M. PINSON NEAL

BOOKS RECEIVED

SCHOOL NURSING. A Contribution to Health Education. By Mary Ella Chayer, R.N. Introduction by Katharine Tucker. New York: Putnam, 1937. 329 pp. Price, $3.00.

LATENT SYPHILIS—AND THE AUTONOMIC NERVOUS SYSTEM. By Griffith Evans. Baltimore: Wood, 1937. 155 pp. Price, $3.00.

DISEASES OF THE HEART. By Sir Thomas Lewis, M.D. (2nd ed.) New York: Macmillan, 1937. 297 pp. Price, $3.50.

HANDBOOK OF HYGIENE. By Joseph W. Bigger, M.D. Baltimore: Wood, 1937. 405 pp. Price, $4.00.

A DOCTOR'S ODYSSEY—A Sentimental Record of LeRoy Crummer, Physician, 1872–1934. By A. Gaylord Beaman. Baltimore: Johns Hopkins Press, 1935. 339 pp. Price, $2.50.

MILK PRODUCTS. By Wm. Clunie Harvey and H. Hill. London: H. K. Lewis Co., 1937. 387 pp. 73 ill. $5.00.

RUSSIAN MEDICINE (Cleo Medica Series). By E. Horstley Gantt. New York: Hoeber, 1937. 214 pp. Price, $2.50.

ALLERGY—ITS PRACTICAL APPLICATION. By J. A. Rudolph. Philadelphia: Dorrance, 1937. 224 pp. Price, $3.00.

YOUR DIET AND HEALTH. By Morris Fishbein, M.D. New York: McGraw-Hill, 1937. 298 pp. Price, $2.50.

AMERICAN RED CROSS FIRST AID TEXT-BOOK (rev. ed.). Philadelphia: Blakiston's, 1937. 256 pp. Paper, $.60, Cloth, $1.00.

PUBLIC HEALTH AND HYGIENE. By Charles Frederick Bolduan, M.D., and Nils W. Bolduan, M.D. (2nd ed.). Philadelphia: Saunders, 1937. Price, $2.75.

CHILD PSYCHOLOGY. By Fowler D. Brooks, in collaboration with Laurance F. Shaffer. New York: Houghton Mifflin, 1937. 600 pp. Price, $3.00.

PATHOLOGY (Cleo Medica Series). By E. B. Krumbhaar, M.D. New York: Hoeber, 1937. 206 pp. 18 ill. Price, $2.00.

ELEMENTARY CHEMISTRY WITH PRACTICAL APPLICATIONS. 2d ed. By Imo P. Baughman. Philadelphia: Lea & Febiger, 1937. 296 pp. Price, $2.75.

HANDBOOK OF CHEMISTRY. 2d ed. Compiled and edited by Norbert Adolph Lange. Sandusky, O.: Handbook Publishers, 1937. 1501 pp. Price, $6.00.

THE TRAFFIC IN HEALTH. By Charles Solomon. New York: Navarre, 1937. 393 pp. Price, $2.75.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Recording Nursing Visits—Comparing health nursing practice and reporting thereon in 3 county units showed surprising variations. How representative recording may be assured is the problem discussed.

BEAN, H., and HANKLA, E. Case Records as an Index of the Public Health Nurse's Work. Pub. Health Rep. 52, 32:1077 (Aug. 6), 1937.

More Viruses—To the long list of pathogenic viruses about which we know so little is added another group of inapparent viruses about which we know even less. Worth reading if only to give one a more wholesome respect for this difficult subject.

COWDRY, E. V. Inapparent Virus Diseases. Sci. Month. Sept., 1937, p. 266.

The Bread of a Nation—Two British reviews of the modern conception of the place of nutrition in public health, not presenting new material, but an excellent restatement of the known.

COWELL, S. J. Outstanding Problems in Human Nutrition.

WIDDOWSON, E. M. Mineral Requirements in Human Nutrition. J. State Med. 45, 8:440 (Aug.), 1937.

Slums and Health—With slum clearance about to begin, at very long last, it behooves health administrators to bestir themselves to find out what conditions inimical to health exist and what they can do about it, so says this pointed reminder on a neglected subject.

DALLA VALLE, J. M. Some Factors Which Affect the Relationship Between Housing and Health. Pub. Health Rep. 52, 30:989 (July 23), 1937.

For Industrial Hygienists—An all glass modification of the impinger type of dust counting apparatus is described.

DALLA VALLE, J. M. Note on Comparative Tests Made with the Hatch and the Greenburg-Smith Impingers. Pub. Health Rep. 52, 33:1114 (Aug. 13), 1937.

Competing with Billy Rose—Describing the elaborate Texas exhibit, setting forth in a popular way various aspects of life. Well illustrated.

ERICKSON, P. T. The Scientific Exhibit, "Story of Life" at the Texas Centennial Exposition, Dallas, Texas, June 6–November 29, 1936. Pub. Health Rep. Supplement No. 123, 1937.

Introduction to Brucellosis—Chronic undulant fever is difficult to diagnose; it is responsible for much ill health never assigned to a definite cause. How great is the problem is being measured in widely separated surveys, the findings of which will be reported in a succeeding series of papers.

EVANS, A. C. Studies on Chronic Brucellosis. Pub. Health Rep. 52, 32:1072 (Aug. 6), 1937.

Social Service and Nursing—Public health nursing supervisors and executives particularly will be glad to read this review of current thinking among their colleagues. Slight shifts in social case work philosophy and practice are important to public health nursing and should stimulate self-examination within that profession.

HAMILTON, G. Basic Concepts of Social Case Work. The Family. 18, 5 (July), 1937.

Infantile Paralysis—Although there is little new in these papers on last year's poliomyelitis outbreak in Manitoba, health administrators in those American communities which are now threatened with epidemics of the disease will want to read about the findings.

JACKSON, F. W., and DONOVAN, C. R. The 1936 Epidemic of Poliomyelitis in Manitoba. Canad. Pub. Health J. 28, 30:363 (Aug.), 1937.

Diphtheria Prophylaxis — British experience with alum-precipitated toxoid confirming the satisfactory results obtained here.

SAUNDERS, J. C. Alum-Precipitated Toxoid in Diphtheria Prevention. Lancet. 1, 18: 1064 (May 1), 1937.

Is Wine a Mocker?—Moderate and sound is this brief summation of the scientific evidence and opinion on the subject of alcohol and well-being. It won't please the pros and will grieve the antis, but it should be read by all.

SPENCER, R. R. Alcohol and Health. Pub. Health News. (New Jersey Department of Health.) 21, 4:108 (Aug.), 1937.

Milk and the Law—Judicial decisions upholding health agencies in their attempt to surround the production of milk with reasonable safeguards are reported upon in this continuing summary.

TOBEY, J. A. Recent Court Decisions on Milk Control (1934–1937). Pub. Health Rep. 52, 31:1038 (July 30), 1937.

Water Resources—Reviewing, in tabular form, the rapid progress in developing American water resources. In flood control, prevention of pollution, production of water power, and supplies of potable water, tremendous strides have been made in the very recent past.

WOLMAN, A. Progress in Federal Conservation of Water Resources. 1936–1937. J. Am. W. W. Assn. 29, 7:915 (July), 1937.

ASSOCIATION NEWS

Health Conservation Contests for Syphilis and Tuberculosis

THE Chamber of Commerce of the United States and the American Public Health Association are introducing two new features into the 1937 City Health Conservation Contest.

This year, for the first time, prizes will be awarded for noteworthy achievement in the fields of tuberculosis and syphilis control.

Any city, whether it be in the regular Contest or in the Special Award Group,* is eligible for either or both the syphilis and the tuberculosis award.

These special prizes are being offered in the belief that some cities may have particularly effective programs in some special field even though their entire programs may not be of an equally high standard. Believing, however, that no city should be entitled to a special prize unless its general program is at least reasonably well balanced, any city wishing to be considered for a special prize for either syphilis or tuberculosis must submit a regular City Health Contest Fact-finding Schedule and obtain a score of at least 600 points.

To compete for these awards a city must fill out the questionnaire for syphilis or tuberculosis and submit such additional information as it feels will be helpful in evaluating its program.

The syphilis or tuberculosis questionnaires must be forwarded to the United States Chamber of Commerce at the same time the regular fact-finding schedule is submitted.

Entry blanks for the Health Conservation Contests for Syphilis and Tuberculosis may be obtained from either the American Public Health Association or the Chamber of Commerce of the United States.

The syphilis and/or tuberculosis questionnaires will be forwarded upon receipt of a filled out entry blank.

If recognition for an outstanding program in tuberculosis or syphilis control is awarded to a city in the Special Award Group,* additional similar recognition will also be given to a city in the regular Contest, providing there is a city in the regular Contest fully entitled to such recognition.

For further particulars concerning the tuberculosis and syphilis awards, write to the American Public Health Association, 50 West 50th Street, New York, N. Y.

* Special Award Cities are those cities which have obtained first awards in the City Contest for two or more years and are barred from competition in the regular contest.

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The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

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NEWS FROM THE FIELD

NATIONAL INSTITUTE OF HEALTH TO ERECT NEW BUILDINGS

PLANS for the construction of three new buildings to provide better facilities for the National Institute of Health, Washington, D. C., have been announced.

The buildings will be erected on a 45 acre tract of wooded land 1½ miles beyond Bethesda, Md., on the Rockville highway. The property was donated to the U. S. Public Health Service for this purpose in 1935 by the late Luke I. Wilson, of Washington. A total allotment of $1,143,000 from the emergency construction program acts of 1934 and 1936 is available for construction.

The National Cancer Institute, recently authorized by Congress, probably will be built on the same tract of land and its work coördinated with that of the National Institute of Health. . . . —*Science,* September 3, 1937, p. 216.

SCARLET FEVER TOXIN

SOME interesting facts resulting from his extensive studies of purified and precipitated scarlet fever streptococcus toxin for active immunization are presented by Surgeon Milton V. Veldee, of the U. S. Public Health Service. He finds that the method of manufacturing the toxin is practicable, and the use of the intradermal method of making the immunizing injections has been shown to possess definite advantages over deeper injections. The use of 790, 3,000, and 10,000 skin-test doses, respectively, has given an acceptable percentage of Dick negative children and has proved satisfactory as to the relative freedom from objectionable reactions. Nevertheless, Dr. Veldee states, it will require a lapse of time in the present study and trial immunizations in communities other than those covered before final conclusions can be drawn as to the adequacy of the method and the necessary dosage.—*The Health Officer,* Sept., 1937, p. 185.

MILITARY SURGEONS CONVENTION

THE Convention of the Association of Military Surgeons will be held at the Ambassador Hotel, Los Angeles, Calif., on October 14–16.

The Pacific Fleet will be in port during the Convention, and an unusually interesting program has been prepared. Physicians, Surgeons, Dentists, and Veterinarians of the Army, Navy, Marine Corps, CCC Camps and the Veterans' Administration will be present.

NEW YORK EMERGENCY RELIEF MERGED WITH STATE AGENCY

THE Temporary Emergency Relief Administration, created in 1931 by the state legislature to provide for the unprecedented relief needs then existing was merged July 1 with the New York State Department of Social Welfare. Many members of the staff of TERA have been added to the staff of the State Department, but many positions have been discontinued.

Local units are allowed to continue the Emergency Relief machinery for a year if they so desire.

PNEUMONIA-VENEREAL DISEASE STUDIES

A COMMISSION has been appointed by the Medical Society of the State of Pennsylvania, Erie, Pa., for the study of pneumonia control. A commission has also been appointed on the control of syphilis and venereal diseases.

OKLAHOMA HEALTH DEPARTMENT IN NEW QUARTERS

THE Oklahoma State Department of Health recently moved its headquarters in Oklahoma City from the State Capitol to a building formerly used as a soldiers' home. The move was made when increased appropriations and federal funds made possible enlarged activities for the Health Department.

There are now 8 bureaus and it is anticipated that the department will have about 300 employees when the program is fully launched; 21 counties in the state now have full-time health units under the general supervision of Dr. Charles E. Leonard. Dr. Charles M. Pearce is the Health Commissioner.

PELLAGRA SURVEY

FOUR northern counties of Arkansas have been selected as the area for a survey of pellagra now being conducted by the Public Health Service in coöperation with the American Red Cross.

An attempt will be made to establish the relationship between pellagra and floods in the 4 counties, over which the Mississippi River flowed during the past winter.

CAPPS PRIZE

THE Institute of Medicine of Chicago offers the Joseph A. Capps Prize of $500 for the most meritorious investigation in medicine or in the specialities of medicine. The investigation may be also in the fundamental sciences, provided the work has a definite bearing on some medical problem.

Competition is open to graduates of Chicago medical schools who completed their internship in 1935 or who completed one year of laboratory work in 1936. The winner of the prize will be expected to present the results of his investigation before the Institute at some meeting in 1938, the time to be designated later. Manuscripts must be submitted to the Secretary of the Institute, 86 East Randolph Street, Chicago, Ill., not later than December 31, 1937.

NEW YORK CANCER COMMISSION APPOINTED

MEMBERS of a Commission authorized by the recent session of the legislature to survey the prevalence of cancer in the State of New York and facilities for treatment were recently announced. Six members of the legislature were appointed by officials of that body, and the following physicians were named by Governor Lehman:

Edward S. Godfrey, Jr., M.D.—State Health Commissioner, Albany.

James Ewing, M.D.—Director of Cancer Research, Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York.

Floyd S. Winslow, M.D.—Rochester (Immediate Past-President of the Medical Society of the State of New York).

The Commission has an appropriation of $15,000 and will report to the 1938 legislature.

MICHIGAN ASSOCIATION

THE Michigan Public Health Association will hold its next meeting at Lansing, November 10–12.

NEW MEXICO ASSOCIATION

THE next meeting of the New Mexico Public Health Association will be held in Albuquerque, N. M., November 18–19.

TEXAS ASSOCIATION

THE Texas Public Health Association will hold its next meeting at Dallas, Tex., November 1–3, at the Adolphus Hotel.

WEST VIRGINIA ASSOCIATION

THE West Virginia Public Health Association will hold its next meeting at Charleston, W. Va., November 8–10.

PERSONALS

Central States

LEWIS S. BARGER, M.D.,† of Golconda, has been appointed Superintendent of the new health unit including Alexander, Hardin, Johnson, Massac, Pope, Pulaski, and Union Counties, Ill.

DR. EARL R. BEIDERWELL, of Belleville, Kans., has been appointed Health Officer of Republic County.

DR. RICHARD F. BOYD, of Cimarron, Kans., has been appointed Health Officer of Gray County.

DR. PAUL A. BREHM,† of Milwaukee, Wis., has been placed in charge of an Industrial Hygiene program initiated under the terms of the Social Security Act.

DR. ERVIN J. BRENNER,† of East Jordan, Mich., has been appointed Health Officer of the newly organized Alger-Schoolcraft County Health Department. Headquarters are in Manistique, Mich., with a branch office in Munising.

DR. FRANK O. BRUNCKHORST has been appointed Health Officer of Neenah, Wis., succeeding DR. BRYCE K. OZANNE, resigned.

JOSEPH L. BRYAN, M.D.,† of Xenia, has been appointed Superintendent of the new health unit including Clay, Edwards, Jefferson, Marion, Wabash, and Wayne Counties, Ill.

DR. FRANK E. BUNTING, of Mandan, N. D., has recently been appointed Health Officer of Morton County.

GUY G. CAMPBELL, M.D.,† of East Gary, Ind., has been appointed head of the medical staff of the Firestone Plantation, Liberia, Africa.

ROLAND R. CROSS, M.D.,† of Dahlgren, has been appointed Superintendent of the new health unit including Franklin, Gallatin, Hamilton, Saline, White, and Williamson Counties, Ill.

DR. FREDERICK E. DARGATZ, of Kinsley, Kans., has been appointed Health Officer of Edwards County.

NETTIE A. M. DORRIS, M.D.,† of Paris, Ill., has been appointed Superintendent of the new health unit including Champaign, Coles, Douglas, Edgar, and Vermilion Counties, Ill.

DR. SPENCER B. DYKES, of Esbon, Kans., has been appointed Health Officer of Jewell County.

DR. HAROLD H. FECHTNER, of Wausau, Wis., has resigned as Director of the Marathon County Health Unit.

DR. CLINTON C. FULLER, Columbus, Kans., has been appointed Health Officer of Cherokee County.

JOHN E. GORDON, M.D., PH.D.,† of Chicago, now Field Director of the International Health Division of the Rockefeller Foundation, has been appointed Professor of Preventive Medicine and Epidemiology at the Harvard Medical School.

DR. CLAUD E. HARDIN, of Oswego, Kans., has been appointed Health Officer of Labette County, succeeding DR. ONNIE E. STEVENSON, who has resigned to become Assistant Superintendent of the State Hospital at Parsons. Dr. Stevenson was Health Officer 12 years.

FRANCIS E. HARRINGTON, M.D.,† Health Commissioner of Minneapolis, Minn., and Director of Hygiene of Minneapolis Schools, has been appointed a member of the Hennepin County Sanatorium Commission, succeeding DR. SOLON MARX WHITE.

FRED P. HELM, M.D., Health Officer of Topeka, Kans., has been appointed Secretary and Executive Officer of the Kansas State Board of Health,

* Fellow A.P.H.A.
† Member A.P.H.A.

succeeding EARLE G. BROWN, M.D.,* resigned, who became Health Officer of Arlington, Va.

SANDOR HORWITZ, M.D.,* of Peoria, has been appointed Superintendent of the new health unit including Marshall, Peoria, Putnam, Stark, Tazewell, and Woodford Counties, Ill.

DR. EDWIN M. IRELAND, of Coats, has been appointed Health Officer of Pratt County, Kans.

DR. WILLIS L. JACOBUS, of Ottawa, Kans., has been appointed Health Officer of Franklin County.

FRANK J. JIRKA, M.D.,† has resigned as Health Commissioner of Illinois, effective September 1.

LORIN KERR, JR., of Toledo, Ohio, has been appointed head of the Bureau of Medical Relief and Superintendent of the Municipal Hospital for Contagious Diseases in Toledo.

DR. GEORGE R. LEE, of Yates Center, has been appointed Health Officer of Woodson County, Kans.

DR. CHARLES K. MCCARTHY has been appointed Director of Activities for the Control and Prevention of Tuberculosis, to be carried on by the State Medical Society, Iowa Tuberculosis Association, and the Iowa State Department of Health.

DR. ERNEST C. MOSER, of Holton, Kans., has been appointed Health Officer of Jackson County.

DR. ROSCOE T. NICHOLS, of Hiawatha, Kans., has been appointed a member of the Kansas State Board of Health, to succeed DR. CHARLES W. ROBINSON, of Atchison, resigned.

MALVIN NYDAHL, M.D.,† has been appointed Assistant Director of Hygiene of Minneapolis Schools.

LORAN E. ORR, M.D.,† of Greenview, has been appointed Superintendent of the new health unit, including Cass, Logan, Mason, Menard, and Sangamon Counties, Ill.

DR. LEROY S. S. OTT, of Leoti, has been appointed Health Officer of Wichita County, Kans.

CARL A. PETERSON, M.D.,† of Moline, has been appointed Superintendent of the new health unit including Bureau, Henry, Mercer, Rock Island, and Whiteside Counties, Ill.

JAMES A. POLING, M.D.,† of Freeport, has been appointed Superintendent of the new health unit including Stephenson, Carroll, Jo Daviess, Lee, and Ogle Counties, Ill.

JOHN W. H. POLLARD, M.D.,† Health Commissioner of Evanston, Ill., for 11 years, has resigned, effective September 1.

EDWARD C. ROSENOW, M.D.,† Professor of Experimental Bacteriology, Graduate School of the University of Minnesota, Mayo Foundation, Rochester, Minn., has been given the James E. Stacey award, consisting of a gold medal and $100.

DR. LLOYD H. SARCHET, of Wellington, Kans., has been appointed Health Officer of Sumner County.

JAMES P. SHARON, M.D.,† of Fort Dodge, Iowa, has been appointed Associate Director in Charge of Venereal Disease Control, Division of Preventable Diseases, Iowa State Department of Health, effective July 1.

MILTON L. SHURR † has been appointed Secretary of the Health Division and the Health Council of the Omaha Council of Social Agencies, Omaha, Neb.

DR. LESTER J. SPINHARNEY has been appointed Health Officer of Cherokee, Ia., succeeding the late DR. CHARLES F. QUINN. Dr. Spinharney held the post from 1927 to 1931.

DR. EDGAR M. SUTTON, of Salina, Kans., has been appointed Health Officer of Saline County.

DR. JOHN G. SWAILS, of Wathena,

* Fellow A.P.H.A.
† Member A.P.H.A.

Kans., has been appointed Health Officer of Doniphan County.

WINSTON H. TUCKER, M.D.,† coördinating Epidemiologist, Illinois State Department of Health, Springfield, Ill., has been appointed Health Officer of Evanston, succeeding JOHN W. H. POLLARD, M.D.,† resigned.

DR. OTIS H. TRUE, of Bird City, has been appointed Health Officer of Cheyenne County, Kans.

W. CLARENCE VAN WORMER, M.D.,† of Homewood, has been appointed Superintendent of the new health unit including Cook, DuPage, and Will Counties, Ill.

DR. HOMER S. WEST, of St. Clairsville, Ohio, has been appointed Health Officer of Belmont County, succeeding DR. ARCHIE J. MARTIN, resigned.

DR. MERLE L. WHITNEY, of Virgil, Kans., has been appointed Health Officer of Greenwood County.

DR. WILLIAM L. WILMOTH, of Blue Rapids, Kans., has been appointed Health Officer of Marshall County.

Eastern States

DR. JAMES ROWLAND ANGELL, retiring President of Yale University, has accepted a full-time position as Educational Counselor of the National Broadcasting Company.

STANHOPE BAYNE-JONES, M.D.,† Dean and Professor of Bacteriology, Yale University School of Medicine, New Haven, Conn., has been elected a member of the Medical Advisory Board of the Leonard Wood Memorial (American Leprosy Foundation).

DR. ERNEST A. CHARON, of Manville, R. I., has been appointed Health Officer of Lincoln, succeeding the late DR. HARRY A. MANCHESTER.

DR. WALTER CLARKE † has been appointed Executive Director of the American Social Hygiene Association, effective July 1. DR. WILLIAM F. SNOW, M.D.,* continues as General Director of the Association. Dr. Clarke in 1935 was loaned by the Association to the New York City Department of Health to organize and direct its Bureau of Social Hygiene. His successor in the Bureau as Director is THEODORE ROSENTHAL, M.D.,† of New York City.

FRANCIS V. CORRIGAN, M.D.,† of Providence, R. I., Assistant Chief of the Bureau of Child Hygiene in the Rhode Island State Department of Health for the past 16 months, has been appointed Chief, succeeding MARION A. GLEASON, M.D.,† who retired after 14 years' service.

JAMES A. DOLCE, M.D.,† Medical Inspector of the Glen Head, L. I., N. Y., schools, has been named Associate Field Director and Health Officer of Allegan County, Mich., under a fellowship from the Kellogg Foundation.

LIVINGSTON FARRAND, M.D.,* retiring President of Cornell University, formerly Professor of Anthropology at Columbia University, has had the title of President-Emeritus conferred upon him by the Board of Trustees of Cornell University.

DR. SIMON J. GORMLEY, of Albany, N. Y., has been appointed an Epidemiologist-in-Training with the State Department of Health.

IRA V. HISCOCK, C.P.H.,* Professor of Public Health, Yale University School of Medicine, New Haven, Conn., is conducting a study of public and private health agencies of Colorado Springs and El Paso County, Colo. He was invited to make the survey by the Community Chest, with a view to recommending a more adequate health service.

DR. EDWARD P. KEMP has been appointed Health Officer of Fairfield,

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* Fellow A.P.H.A.
† Member A.P.H.A.

Conn., for the unexpired term of LAURENCE E. POOLE, M.D.,* resigned.

DR. FRANCIS I. NETTLETON has been appointed Health Officer of Shelton, Conn.

DR. MICHAEL J. O'NEIL, of Providence, R. I., has been appointed Medical Director of the Rhode Island State Unemployment Relief Commission, succeeding DR. HENRY J. HOYE.

M. L. PALMIERI, M.D., M.P.H., has been elected as the first full-time health officer of Middletown, Conn.

DR. DAVID D. RUTSTEIN, of Boston, N. Y., has been appointed full-time Medical Consultant in Pneumonia Control on the staff of the New York State Department of Health.

DR. RALPH M. VINCENT, of Maine, N. Y., has been appointed Epidemiologist-in-Training on the staff of the New York State Department of Health.

Southern States

DR. JAMES L. ADAMS, of Hobart, Okla., has been appointed Health Superintendent of Kiowa County.

DAVID H. ANDREW, M.D., formerly Health Officer of Wythe County, Wytheville, Va., has been appointed Director of the Bureau of Communicable Diseases in the Baltimore Health Department (Maryland), effective June 28, succeeding ADOLPH WEINZIRL, M.D.,† who is now Health Officer of Portland, Ore.

DR. GLENN J. BRIDGES, of Atlanta, has been appointed Health Officer of Jenkins County, Ga., succeeding DR. HUGH B. SENN, of Millen, resigned.

EARLE G. BROWN, M.D.,* has been appointed Health Officer of Arlington County, Va.

JOHN W. BROWN, M.D.,* of Austin, Tex., State Health Officer, has been appointed Health Officer of Houston.

DR. DONALD L. BUTTERFIELD, of Moundsville, W. Va., has been appointed Medical Adviser of the West Virginia State Department of Public Assistance. He will have charge of work with crippled children, adult physical rehabilitation, and emergency medical and hospital care of the Department's relief load.

DR. ARCHIE S. CALHOUN, of Mount Olive, Miss., has been appointed Health Officer of Covington County, succeeding DR. GEORGE T. CRANFORD, of Seminary.

EVERETT E. CARRIER, M.D.,† of Johnson City, Tenn., Assistant Health Officer of Washington County since 1934, has been appointed Health Officer, to succeed WALLACE L. POOLE, M.D., M.P.H.,† resigned. DR. JOSEPH L. CONYERS, of Gates, has been appointed Assistant to Dr. Carrier.

DR. WARREN DALLAS CARTER, of Wilmington, N. C., has been appointed Health Officer of Burke and Caldwell Counties, to supervise units recently established in the two counties.

TURNER E. CATO, M.D.,† of New Cumberland, W. Va., former Health Officer of Hancock County, has been appointed Health Officer of Kanawha County, with headquarters in Charleston.

DR. ROBERT M. CHURCH, of Stilwell, Okla., has been appointed Health Superintendent of Adair County, Okla.

DR. THOMAS W. COLLIER, of College Park, Ga., has been appointed Health Officer of Dougherty County.

LINWOOD FARLEY, M.D.,† recently Health Officer of Hanover County, Va., has been appointed Assistant Health Officer of the Valley Health District, Va.

LEON PAUL FORGRAVE, M.D., of St. Joseph, Mo., has been appointed a member of the State Board of Health, succeeding WILLIAM T. ELAM, M.D.,

* Fellow A.P.H.A.
† Member A.P.H.A.

of St. Joseph, whose term recently expired.

DR. BENJAMIN FREEDMAN, of New Orleans, La., has been appointed in charge of the Washington Parish Health Unit.

DR. JACK E. FROST, of DeKalb, Tex., has been appointed Health Officer of Bowie County.

DR. HARRY B. HALL, of Boise City, has been appointed Health Superintendent of Cimarron County, Okla.

DR. RALF HANKS, of Fulton, Mo., was recently elected President of the Missouri Association for Mental Hygiene.

WILLIAM P. HARRISON, M.D., of Teague, Tex., was recently elected President of the Texas State Board of Health, succeeding ELBERT W. WRIGHT, M.D.,† of Bowie.

DR. WILLIAM C. HUMPHRIES has resigned as Health Officer of the City of Griffin, and Spalding County, Ga.

DR. ROBERT H. JOHNSON, of Clarksville, Ark., has been appointed Health Officer of Johnson County, Ark.

DR. PHILIP S. JOSEPH, of Alice, Tex., has been reëlected Health Officer of Jim Wells County.

DR. WEBSTER B. KEY, of Memphis, Tenn., has been appointed to the Tennessee State Public Health Council, to succeed DR. JOHN C. AYRES, of Memphis, resigned.

DR. RALPH A. KINSELLA, of St. Louis, Mo., has been appointed a member of the City Plan Commission.

GEORGE MCLEAN LAWSON, M.D.,† recently Professor of Public Health and Bacteriology at the University of Louisville, Ky., School of Medicine, has been appointed Professor of Preventive Medicine and Bacteriology at the University of Virginia Department of Medicine, Charlottesville, Va.

DR. SIGMA V. LEWIS, of Roxboro, N. C., has been appointed Health Officer of a district including Washington, Tyrrell, and Hyde Counties.

DR. JAMES T. LOWE, of Mangum, Okla., has been appointed Health Officer of Greer County.

DR. HUGH B. MAGILL, JR., formerly of Northampton County, has been named Health Officer of Hanover County, Va., with headquarters at Ashland.

DR. KARL E. MANEVAL, of Mexico, has been appointed Health Officer of Audrain County, Mo., succeeding the late DR. ROBERT W. BERRY.

DR. CARL T. MARTIN, of Abbeville, has been appointed Health Officer of Henry County, Ala., succeeding DR. WALLACE L. CHAMBERS, resigned.

DR. GLEN W. MCDONALD, of Ada, Okla., has been appointed Health Officer of Pontotoc County.

DR. BENJAMIN C. MIDDLETON, of Texarkana, Ark., has been appointed Health Officer of Miller County.

DR. ZACK P. MITCHELL, of Bryson City, N. C., recently Assistant Health Officer of Swain County, has been appointed Health Officer of a district comprised of Cherokee, Clay, and Graham Counties.

DR. GEORGE E. NEWTON, of Scottsboro, Ala., Health Officer of Jackson County, has been appointed Health Officer of Lauderdale County, succeeding the late DR. WILDER D. HUBBARD, of Florence.

DR. EDWARD C. O'CAIN, of Winona, Miss., has been appointed Health Officer of Montgomery County, succeeding DR. JAMES P. SYNNOTT.

DR. PHILIP G. PADGETT, of Forest City, N. C., has been appointed Assistant Health Officer of Swain County, succeeding DR. ZACK P. MITCHELL.

DR. WALTER R. PARKER,† of Woodland, N. C., has been appointed Health Officer of Northampton County, Va.

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* Fellow A.P.H.A.
† Member A.P.H.A.

THOMAS PARRAN, M.D.,* President of the A.P.H.A., and Surgeon General of the U. S. Public Health Service, had conferred on him the Honorary Degree of Doctor of Science by Wesleyan University, Middletown, Conn., on June 20.

DR. FRAY O. PEARSON, of Knoxville, Tenn., has been appointed Director of the Upper Cumberland Health Unit, comprising Fentress, Pickett, Clay, Overton, and Jackson Counties.

DR. EDWARD W. PILLSTROM has been appointed Health Officer of Coal Hill, Ark.

HERBERT F. READLING, M.D.,† of Durham, N. C., has been appointed Health Officer of the Thomas County, Ga., Health Department, succeeding DR. JAMES R. DYKES, resigned.

DR. JESSE E. ROSS, JR., of Henderson, Tex., has been named Health Officer of Rusk County.

DR. CHARLES N. SCOTT, of Alloy, W. Va., has been appointed head of the Bureau of Venereal Diseases in the West Virginia State Department of Health.

DR. WYMAN P. STARLING, of Clinton, N. C., has resigned as Health Officer of Sampson County, to enter private practice.

DR. JOSEPH B. THIGPEN, of Bay Springs, Miss., has been appointed Health Officer of Jasper County, effective July 1.

DR. WALTER E. VEST, of Huntington, W. Va., was elected President of the Public Health Council of West Virginia at a meeting in Fairmont in July.

DR. WILLIAM H. WALCOTT, of Chatham, Va., has resigned as Health Officer of Pittsylvania County, to accept a position on the staff of the U. S. Public Health Service in Washington, D. C. His successor is DR. BENJAMIN R. ALLEN, of Luray, Va.

DR. CYRIL A. WALWYN, Assistant Director of the Health Service of Howard University, Washington, D. C., has been appointed Medical Director of the John A. Andrew Memorial Hospital and head of the Health Department of Tuskegee Institute, Tuskegee, Ala. He succeeds DR. EUGENE H. DIBBLE, JR., who recently was appointed manager of the Veterans' Administration Facility at Tuskegee.

VIRGINIA E. WEBB, M.D.,† who was temporarily in charge of the Washington Parish Health Unit, New Orleans, La., has returned to her work in the maternal and child health unit in New Orleans.

DR. JABEZ H. WILLIAMS, formerly of the staff of the State Sanatorium, Sanatorium, N. C., has been appointed Health Officer of Sampson County, to succeed DR. WYMAN P. STARLING, of Clinton.

DR. MILTON C. WILLIAMS, of San Marcos, Tex., has been appointed Health Officer of Hays County.

DR. C. C. WITT, of Arcadia, Fla., has been appointed Supervisor of District No. 2 of the State Health Department, with headquarters at Lake City.

Western States

DR. JOHN W. ADAMS, of Waterville, Wash., has resigned as Health Officer of Douglas County.

WELBY W. BIGELOW, M.D., has been appointed to have charge of the Northern District of the new public health unit established in Utah, with headquarters in Salt Lake City.

J. ROSSLYN EARP, DR.P.H.,* formerly Director of Public Health for the State of New Mexico, has been appointed Medical Editor in the Division of Public Health Educa-

* Fellow A.P.H.A.
† Member A.P.H.A.

tion of the New York State Department of Health, Albany.

DR. FRANKLIN G. EBAUGH, Professor of Psychiatry, University of Colorado School of Medicine, Denver, has been conducting a course in Mental Hygiene at the University of Hawaii during the summer, and is making a survey of mental hygiene problems in Honolulu under the auspices of the Chamber of Commerce. It is planned to establish a psychiatric clinic.

DR. HAROLD M. ERICKSON, of The Dalles, Ore., has been appointed Health Officer of The Dalles and Wasco County.

DR. FRED A. FORNEY, of Woodmen, Colo., has been appointed Director of the new Division of Tuberculosis of the Colorado State Department of Welfare, with headquarters in Denver.

J. C. GEIGER, M.D.,* Director of Public Health, City and County of San Francisco, Calif., was recently named President of the Pasteur Society of Central California.

JAMES W. HAWKINS, M.D.,† formerly of Coeur d'Alene and recently head of the Twin Falls County Health Unit, has been appointed Director of Public Health of Idaho, with offices at Boise, Idaho. He succeeds JAY D. DUNSHEE, M.D.,* who went to Idaho in December, 1935, as medical adviser and was appointed to the position when it was created in March, 1937.

JESSE H. HENDRY, M.D.,† of Tacoma, Wash., has been appointed Physician in Charge of Tacoma Hospital, a federal institution for Indians, to succeed DR. JOHN N. ALLEY.

COIT I. HUGHES, M.D., was recently appointed State Superintendent of Public Health for Arizona, to succeed GEORGE C. TRUMAN, M.D.,† of Phoenix.

DR. LAWRENCE E. C. JOERS, of Tacoma, Wash., has been appointed Health Officer of Pierce County, to succeed DR. HINTON D. JONEZ.

ALTON A. JENKINS, M.D.,† has been appointed to have charge of the Southwestern District of the new public health unit established in Utah, with headquarters in Cedar City.

DR. JOHN M. KIRBY, of Bakersfield, Calif., has been placed in charge of a newly created health unit in Monterey County, Calif.

JULIAN O. LONG, M.D.,† formerly Health Officer of the Eighth District of New Mexico, has been placed in charge of the Third District, with headquarters in Albuquerque.

DEATHS

ARTHUR O. PETERS, M.D.,† Commissioner of Health of Dayton, Ohio, died recently.

HARVEY D. BROWN, PH.D., Director since 1923 of the Philadelphia Health Council and Tuberculosis Committee, Philadelphia, Pa., died August 21. He was Founder of the Anti-Tuberculosis Society of Wisconsin and a former Director of the National Tuberculosis Association.

WILLIAM BROSMITH, of Hartford, Conn., the Dean of insurance counsel in the United States, died on August 22, at the age of 82. Mr. Brosmith was Vice-President and General Counsel of the Travelers Insurance Company. Since the beginning of the City Health Conservation Contest, conducted by the United States Chamber of Commerce and the American Public Health Association, Mr. Brosmith has been a supporter of the Contest and has interpreted its aims and objectives to the insurance world.

* Fellow A.P.H.A.
† Member A.P.H.A.

CONFERENCES AND DATES

American Public Health Association—Sixty-sixth Annual Meeting. New York, N. Y. October 5–8.

MEETINGS OF THE FOLLOWING RELATED ORGANIZATIONS:

American Association of School Physicians. Annual Meeting in conjunction with Annual Meeting of the American Public Health Association. Hotel Pennsylvania, New York, N. Y. October 5–8.

American Association of State Registration Executives. McAlpin Hotel, New York, N. Y. October 5–8.

American Statistical Association—Biometric Section. McAlpin Hotel, New York, N. Y. October 8.

Association of Women in Public Health. Hotel Pennsylvania, New York, N. Y. October 6.

Conference of State Sanitary Engineers. Hotel Pennsylvania, New York, N. Y. October 5–6.

Delta Omega. McAlpin Hotel, New York, N. Y. October 6.

Federation of Sewage Works Associations. Hotel Pennsylvania, New York, N. Y. October 8.

National Organization for Public Health Nursing—Course Directors. Hotel Pennsylvania, New York, N. Y. October 7.

National Society for the Prevention of Blindness. Hotel Pennsylvania, New York, N. Y. October 6.

Public Health Association of New York City. Governor Clinton Hotel, New York, N. Y. October 5.

Academy of Physical Medicine—Fifteenth Annual Meeting. Hotel Walton, Philadelphia, Pa. October 19–21.

American Academy of Orthopaedic Surgeons. First West Coast Meeting. Hotel Biltmore, Los Angeles, Calif. January 16–20, 1938.

American Association for the Advancement of Science, and Annual Science Exhibition. Murat Theater, Indianapolis, Ind. December 27–30.

American Clinical and Climatological Association. Baltimore, Md. October 11–13.

American College of Physicians,. Waldorf-Astoria Hotel, New York, N. Y. April 4–8, 1938.

American College of Surgeons. Chicago, Ill. October 25–29.

American Dietetic Association—Twentieth Annual Meeting. John Marshall Hotel, Richmond, Va. October 18–21.

American Education Week. November 7–13.

American Institute of Nutrition. Baltimore, Md. Spring, 1938.

American Statistical Association. (Several sessions on Vital Statistics and Biometrics.) Haddon Hall, Atlantic City, N. J. December 27–31.

American Water Works Association. New Orleans, La. April 25–28, 1938.

Association of Dairy, Food and Drug Officials of the United States. Raleigh Hotel, Washington, D. C. October 26–29.

Association of Military Surgeons of the United States. Ambassador Hotel, Los Angeles, Calif. October 14–16.

Biennial Conference of the National Association for Nursery Education. Theme: Safeguarding the Early Years of Childhood. Nashville, Tenn. October 20–23.

Fifth International Heating and Ventilating Exposition. Grand Central Palace, New York, N. Y. January 24–28, 1938.

International Association of Milk Dealers. Dallas, Tex. Oct. 21–23.

International Association of Milk Sanitarians. Brown Hotel, Louisville, Ky. October 11–13.

Iowa Public Health Association. Des Moines, Ia. May, 1938.

Medical Library Association. Boston, Mass., May, 1938.

Michigan Public Health Association. Lansing, Mich. November 10–12.

Mississippi Public Health Association. Second Annual Meeting. Jackson, Miss. December 9–10.

Missouri Water and Sewerage Conference, Thirteenth Annual. Lakeside, Mo. October 21–23.

National Association of Exterminators and Fumigators, Inc. Hotel Peabody, Memphis, Tenn. October 25–27.

National Conference of Social Work. Seattle, Wash. June 26–July 2, 1938.

National Safety Congress and Exposition (26th). Kansas City, Mo. October 11–15.

National Warm Air Heating and Air Conditioning Association. New York, N. Y. January 24–26, 1938.

New England Milk Producers Association. Boston, Mass. October 26–27.

New England Sewage Works Association. Worcester, Mass. October 1–2.

New Jersey Health and Sanitary Association—63rd Annual Meeting. Princeton, N. J. December 10–11.

New York State Association of Public Health Laboratories — Mid-Year Meeting. State Laboratory, Albany, N. Y. Friday, October 29.

New York State Conference on Social Work. New York, N. Y. October 19–22.

New York State Health and Physical Education Association. Syracuse, N. Y. December, 1937.

Ohio Conference of Sewage Operators. Cincinnati, Ohio. October 19–20.

Ontario Hospital Association. Toronto, Ont. October 21–23.

Pan American Medical Association—Seventh Cruise Congress to Havana. (Pan American Medical Association, 745 Fifth Avenue, New York, N. Y.) January 15–31, 1938.

Pennsylvania State Organization for Public Health Nursing. Altoona, Pa. October 28.

Second National Conference on Educational Broadcasting. Chicago, Ill. November 29, 30, December 1.

Southern Medical Association. New Orleans, La. November 28.

West Virginia State Health Conference. Charleston, W. Va. November 8–10.

FOREIGN

Institute of Sewage Purification. London. November 19.

World Conference on Leprosy. International Leprosy Association. Cairo, Egypt. March 21, 1938.

Hawaii Territorial Medical Association. Honolulu, T. H. May, 1938.

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